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ABSTRACT

This syllabus for a basic course in library automation is designed for advanced library students and practicing librarians. It is intended not to make librarians and students qualified programmers, but to give them enough background information for intelligent discussion of library problems with computer personnel. It may also stimulate the student to specialize in library-computer technology. Unit areas covered are introduction, how a computer works, programming preliminaries, using the COBOL programming language, circulation applications--charging and discharging books, overdue messages and statistics, and serials applications--holdings, periodical receipt cards, claim letters, and update program. Programs and flowcharts in the syllabus present suggested solution to the various problems. Students are encouraged to create their own solutions. Supporting activities include demonstrations, flowcharting, and programming. Materials and equipment include IBM cards, keypunch, and computer facilities. The instructor is urged to check the materials in the syllabus with the computing center to assure that the local center's operating conventions are observed. (Author/KP)

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LIBRARY AUTOMATION

A "First Course" Teaching Syllabus

by

Sam A. Dyson

Prepared under a grant from the U. S. Office of Education, Title II-B Higher Education Act of 1965, P. L. 89-329, as amended

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PREFACE

The idea behind this syllabus is not to tie the instructor to a set of procedures, but rather to present him with a point of departure. It is not to make of librarians qualified programmers, but to give them enough of a background that they may more intelligently discuss library problems with computer personnel. It will also serve the student in that he may find that his interest and abilities will be better served to specialize in library-computer technology, and so this course may prove to be the first of a series.

Some points need to be made on the mechanics of using this syllabus. The abbreviations which follow have been used in the right margins to guide the instructor in suggested equipment uses:

CB - Chalk Board
OP - Opaque Projector
OH - Overhead Projector

Sometimes the item to be illustrated is indicated also. You will find a pocket at the end of this syllabus that may be used to insert all the materials to be projected in the Overhead and Opaque projectors. The syllabus is in loose leaf format in order to provide easy updating by the instructor, and also to encourage the preparation of the instructor's own flowcharts, programs, and printouts. The leaves of the syllabus are printed only on the recto of the page providing space on the verso for personal notes by the instructor.

BEFORE PROCEEDING WITH THIS COURSE, THE INSTRUCTOR SHOULD CHECK THE MATERIAL IN THIS SYLLABUS WITH HIS COMPUTING CENTER PERSONNEL IN ORDER TO ASSURE THAT THE LOCAL CENTER'S OPERATING CONVENTIONS ARE STRICTLY OBSERVED. Make whatever adaptations they feel necessary before beginning the course. Differences in computer models, makes, configurations, etc., will change portions of this course. Ample space has been provided for these changes.

Underlying all of these pages is the author's belief that librarians are more than adequately endowed with intelligence to use computers in the daily performance of their profession. Hopefully, this syllabus will prove that statement beyond doubt.

The author's gratitude goes to the U. S. Office of Education for their willingness to give extension of time for the production of this syllabus. Special thanks go to Grant Venn, Ray Fry, and Frank Stevens, who at various times gave the author the exact help needed. Deep gratitude is also due Katherine Stokes, who through letters and telephone calls gave the author

encouragement to finish this course. As promised, she received the first copy published. Thanks go, too, to the author's secretary, Mrs. Mary Belton, who did all the typing chores, and helped immeasurably with proof reading; and to Al McKee, Louisiana Tech University's Computing Center Director, and his staff who did not run when they saw me coming - this publication would not have been possible without their patient helpfulness.

Regretfully, this syllabus is incomplete in that it does not include applications in cataloging, acquisitions, and selective dissemination of information (SDI). On the other hand, how much can be absorbed in one course? These and others will be included in a "second course" syllabus. In the meantime, why don't you write your own? Good luck!

LIBRARY AUTOMATION

A "First Course" Teaching Syllabus

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LIBRARY AUTOMATION

A "First Course" Teaching Syllabus

Introduction

This syllabus is an out-growth from a federally sponsored institute on "Planning and Implementing Academic Library Automation Programs" held at Louisiana Tech University in June of 1970. Some of the programs included are ones used as examples during the institute, others are adapted from the problems used, and still others were designed specifically for this course. The primary desire in this course is to keep things as simple as possible.

This syllabus is designed with two groups in mind: (1) the practicing librarian who may be led through it on an "in-service" education basis, and (2) the advanced student in library school who is taking it for college credit. The first group may want to take it in small segments over an extended period of time. The arrangement of the lessons hopefully provides for this kind of use. The student is assumed to have a thorough grasp of library procedures, implying advanced academic standing as prerequisite to this course.

Early programs are treated as isolated problems. As the student gets deeper into the course, programs begin to show relationship to one another. Since each problem is designed to teach the student specific principles of library automation, "complete systems" design considerations will require drastic changes to correlate these programs into one continuous and efficient system. Another course should emphasize the "systems" concept where entire groups of library procedures are automated with single, continuous programs. These continuous programs are best built in units and then tied together and correlated with the other units previously completed. The design of this course is compatible with the systems concept, and may be used as prerequisite to an advanced course in library automation systems.

All of the programs and flowcharts in this syllabus present suggested solutions to the various problems. There are probably better and more efficient ways of solving each of them. Your own solutions will be better because they are yours. The ones listed in this syllabus furnish you with a "point of departure" and are useful to that extent. They are written as they are to systematically introduce new language principles with each new program. Let the student have a free hand in creating his own solutions to the various problems. A "second course" currently being designed, will take

up the application of computers to problems of acquisitions, cataloging, and selective dissemination of information (SDI). The MARC II format will be introduced and used extensively.

Computers are designed to perform speedily, accurately, and with minimum difficulty those processes which are routine in nature. Any activity one finds himself repeating day after day is a prime candidate for automation. Conversely, computers are not designed to perform all the work that professional people do. They are competent to take care of the procedures within the limits of the "rule" but not the exceptions. Therefore, in any planning for automation, the goal should be to care for the vast majority of the cases, and leave the exceptions for the professionals to handle.

Because much of the work conducted in libraries is of a routine nature, especially with reference to technical services and the records of readers' services, it lends itself well to automation by computers. Librarians plagued by the "what if..." syndrome often dream up the most unlikely set of circumstances for the systems analyst to computerize. The stock answer to such a rare combination of circumstances is, "How do you handle that situation now? ... You will still handle it that way after automation!" It is highly inefficient to write programs to take care of a situation which may not happen more than once a year - or maybe never happen for that matter. If your programs will relieve you from 85 to 90 per cent of the routine, you will be very pleased with the efficiency and accuracy of your automation efforts.

Computers will not replace librarians, but they will relocate them. The routine drudgery of librarianship will be done exclusively by computers, releasing the librarian to spend an increasingly large proportion of his time in genuinely professional work. To some librarians this will not be a welcomed change - too long have they trudged through the drudgery and morass of the minutiae of librarianship. The thought of their having to do professional work frightens them. To the vast majority of them, however, this will provide a new lease on life... somewhat like an unexpected release from prison!

The programs included in this syllabus have been run successfully on an IBM 360 model 30 computer. They may be easily adapted to other configurations with the advice of your local computer personnel.

UNIT I

HOW A COMPUTER WORKS

Instructor's Notes

The purpose of this unit is to explain in simple language how a computer works.

The lecture - demonstration method is used.

Some helpful resources are:

Materials and Supplies:

- IBM cards - one for each student
- IBM card transparency for overhead projection
- Grease pencil and chalk
- Blank transparencies for overhead projection
- Sample program
- Sample data transparency

Equipment:

- Overhead projector (OH)
- Chalk board (CB)
- Projection screen (if classroom wall is not sufficient)
- Computer - for tour
- Opaque projector (OP)

References:

- Science Research Associates, Inc. COMPUTER SYSTEMS FUNDAMENTALS, "Techniques". Chicago, Ill., Science Research Associates, Inc., c1969. Pp. 213-225; 238-281.
- IBM DATA PROCESSING TECHNIQUES, "A Data Processing Glossary". White Plains, N. Y., IBM, Technical Publications Department, 1969.
- IBM SYSTEMS REFERENCE LIBRARY, "IBM System 360 Disk and Tape Operating Systems COBOL Programmer's Guide".
- _____, " ... COBOL Language Specifications".

Class preparation:

Punch one card for each student with all numeric, alphabetic, special characters. Prepare transparencies listed under materials above.

The Punch Card (Distribute 1 card to each student)

The most common vehicle used for the introduction of machine readable information into computers is the card. There are other ways which we will see when the time comes, but most of the time, somewhere along the way, all the information had to be punched into cards like these.

There are 80 columns on the card. That means that only 80 characters of information can be contained on one card. The different characters are designated by varying combinations of punches in the columns. There are 12 rows on the standard card. The 12, 11, and 0 rows are reserved for zone punches. A combination of zone and numeric punches can designate any one of the characters in a character set. Numbers are indicated by the corresponding numeric punch. Letters and special characters are made up of combinations of zone and numeric punches.

The card is notched on one corner to aid in getting the cards arranged properly. A card which sticks above the notched corner could be out of place.

Summary

The computer is instructed by means of system control cards, to read a program in a specified language. It reads the program, and then translates it from the specified language to machine language. It is told when the program is finished and the data begins. It reads and manipulates the data step-by-step as directed by the program. Output is provided in the form and format specified in the program. You even have to tell the computer by means of control cards that its job is over!

In this oversimplified version of how a computer works, three things seem to be extremely important: system control cards, the program, and data. Let's look at each of these briefly.

System Control Cards (CB - Control cards as outlined)

... are cards which prepare the computer configuration to receive your program, control the system while your program is being run, and shuts the system down when your program is finished. Initially, you will use only the following control cards; beginning in column one of the card, spacing exactly as indicated:

// JØB name (2091, 40107), 'your name', TIME=003 (see Computing Center Procedures in the Appendix of this publication)

(Note: Lower case alphabetic terms label information to be supplied by the programmer.)

This is the "job card" and has several functions: (1) It gives the program a name that the computer uses to identify the specific program. The name may be up to eight alphameric characters in length. (2) It identifies the account against which the computer time is to be charged. (3) It associates your name with the job being done. (4) Finally, it tells the computer that you estimate this program will take three minutes of its time. Be generous with your estimates until you have a relatively successful program run, then you can begin to reduce your estimates to more realistic proportions.

// ØPTIØN LINK (p. 22 in ... PROGRAMMER'S GUIDE.)

This card indicates that the program is to be linkage edited after compilation. That does not mean much to you, but take my word for it, will you? (See p. 12 in PROGRAMMER'S GUIDE.)

// EXEC CØBØL (p. 20 in ... PROGRAMMER'S GUIDE.)

This card tells the computer that the symbolic language we will be using and it will have to translate is COBOL. You would think that a "mechanical brain" would have the intelligence to recognize the language, would you not? Well, it does not - you have to tell it, and this is the card that does it.

Your program follows the "EXEC CØBØL" card. Immediately after your last instruction in your program - which is usually something like "STØP RUN" - you place the following control card:

/* (p. 17 in ... PROGRAMMER'S GUIDE.)

This card yells to the computer, "Hey! Dum-dum! I'm at the end of my program!"

// EXEC LNKEDT (p. 12 in ... PROGRAMMER'S GUIDE.)

You promised the computer in your "ØPTIØN LINK" card above that the program would be linkage edited after compilation; this card tells it that now is the time to execute the linkage editing phase.

// EXEC

This card tells the computer to do the program that it translated from

COBOL a few seconds ago. Your data follows this card - if it is on cards, as yours will be for a while.

/*

Again, you have to tell the computer, "There ain't no more data!"

/& (p. 17 in ... PROGRAMMER'S GUIDE.)

This is an "end of job" card. It tells the computer that its work is finished. It will not know it is finished until you tell it. Stupid machine!

There are many other system control cards, but we will introduce them to you as they are necessary in planning your programs. (See pp. 15-38 in ... PROGRAMMER'S GUIDE.)

Your Program (OP - Sample program)

... describes all data fields, sets aside whatever storage areas are necessary, and lists the specific logical steps to be taken in solving a problem. The program is written in the language most compatible to the problem to be solved. FORTRAN is especially designed for mathematical and scientific problems. SPS and machine language are most readily accepted by the computer, and are therefore very efficient, but are difficult for human operators to use and understand. COBOL is a business oriented language which has the added advantage of having the federal government behind it. It is one of the most widely used languages today and is very near standard English in appearance. It is therefore easily understood by English-speaking people. PL/1 is supposed to be a combination of the best features of FORTRAN and COBOL. It is very compatible to bibliographic data and will probably become standard library programming language when it is fully developed and implemented. Until then, we will use COBOL.

There are many other languages designed for specific and minute applications. Others are being introduced almost every day. We have mentioned only a few of the most widely used ones.

We will get into the details of the program when we begin our study of the COBOL programming language.

Your Data (OH - Sample data transparency)

... is the information upon which the program operates. It can be internally or program generated, or externally added to the program. Any

input device may be assigned to add the data to the program. Form and format of the data must be described in minute detail before the program can be properly written. If the program is written first, the data must conform exactly to the data descriptions included in the program. Any changes in form or format of one will necessitate corresponding changes in the other.

Data is read into an input space reserved by the programmer in the computer's memory. In order for the data to be output, it has to be physically moved (or rather, duplicated) in an output area, also reserved by the programmer. These input and output areas are named and assigned to specific pieces of hardware in the environment division, and are described in detail in the data division of the COBOL program, as we will see later on in the course.

Tour

Here the instructor should take his class on a tour of the computer facilities the class will be using during the course. He should point out each separate piece of hardware and briefly explain library uses for each. He should trace a program through the system as added emphasis to the work already completed in class.

UNIT II

PROGRAMMING PRELIMINARIES

Instructor's Notes

The purpose of this unit is to give the student a clear idea of what it takes to prepare material for machine readable applications.

The method to be used is lecture - demonstration.

Valuable resources which should be available are:

Materials and supplies:

- COBOL coding sheets (IBM form no. x28-1464-5 U/M 050)
- Coding sheet transparency
- Grease pencil
- Keypunch keyboard transparency
- Verifier keyboard transparency
- Picture of Keypunch
- Picture of Verifier
- Flowchart transparency
- Flowcharting template (X20-8020-1 U/M 010)
- Assignments

Equipment:

- Opaque projector
- Overhead projector
- Keypunch machine
- Verifier

References:

- REFERENCE MANUAL, "IBM 29 Card Punch".
- REFERENCE MANUAL, "IBM 59 Card Verifier".

Class preparation includes the following:

- Duplication of the lesson assignment problem - determine sequence numbers
- Preparing the transparencies listed above
- Scheduling the use of keypunches and verifiers

Coding the Coding Sheets (OH - Coding sheet transparency)

Format of the coding sheet:

- Heading
- Sequence field

Continuation column
"A" margin
"B" margin
Identification field

Similarity to IBM card:

80 columns on the coding sheet
Each line on the coding sheet represents a single punched card

Character distinction in coding: (CB)

0 is the number zero, and Ø is the letter o.
1 is the number one, and I is the letter i.
2 is the number two, and Z is the letter z.

Control card coding:

Control cards may be coded on the coding sheets without regard to the fields noted in the format section above, but rather exactly as described in the previous unit. Review this briefly.

Program coding:

Your program cards must strictly adhere to the coding sheet format outlined previously. Program cards are written using the rules of the language, and the format of the coding sheets mentioned follow the requirements of the COBOL language. Limits of sequence field, continuation column, "A" and "B" margins, and ID field must be observed.

Data format and coding:

Unlike the program coding, data coding will be in the format designed by the programmer. All 80 columns of the coding sheet may be used as required by the data. Data may require that more than one card or line on the coding sheet be punched or written in order to complete one record. This may be done, but it is wise to set aside a field to tie all cards having to do with one record together. When we get to it in our course, you will have experience with this principle.

Using the Keypunch and Verifier

The Keypunch - 029: (OP - picture of keypunch)

Main-line switch
Card hopper
Punching station
Reading station
Card stacker
Keyboard (OH - keyboard transparency)
Backspace key
Program unit
Program-control lever

Column indicator
Programming the keypunch
The Verifier - 059 (OP - picture of verifier)
Similarity to keypunch
Keyboard (OH - keyboard transparency)
Error trial procedure

(a) press the error-reset key to unlock the keyboard for a retry
(b) press the correct key on the keyboard - if another error occurs, repeat steps (a) and (b)
(c) if the second retry is in error, the card is notched and moved to the next column
(d) if the card is error-notched or a release is initiated, auto-feeding is suspended and the OK notch is suppressed
(e) the next card must be fed by pressing the feed key on the keyboard

Assignment

Prepare according to the format prescribed below a set of library registration cards for yourself. Sequence numbers will be assigned by the instructor.

First card:

Card columns	1 - 6	sequence number
	7 - 36	name, in normal order
	37 - 66	home street or P. O. address
	67 - 74	home telephone number
	75	classification, coded as follows:
		1 - freshman
		2 - sophomore
		3 - junior
		4 - senior
		5 - graduating student
		6 - Masters degree candidate
		7 - Doctoral degree candidate
		8 - special student
		9 - faculty
		0 - staff
		Blank - other
	76	college enrolled, coded as follows:
		1 - Agriculture
		2 - Arts and Sciences
		3 - Business

	4 - Education 5 - Engineering 6 - Home Economics
77	sex, coded as follows: F - female M - male
78 - 79	blank
80	card code, value 1

Second card:

Card columns	
1 - 6	sequence number
7 - 31	place of address
32 - 36	zip code
37 - 66	campus address
67 - 74	campus telephone number
75 - 79	blank
80	card code, value 2

Demonstration of Keypunch and Verifier

Take the class to the keypunch and verifier machines and demonstrate what was covered in class. Let them begin work on their assignments, and answer questions as they occur. Ask them to code the data on coding sheets before they begin to keypunch the information into cards.

The Flowchart (CB - flowchart symbols)

The purpose of a flowchart is to furnish a picture of the steps taken in solving a problem. We will be primarily interested at the outset in program flowcharts; system flowchart considerations will be noted as they are needed. The symbols are listed for you on the envelopes in which your flowcharting templates came. Basic ones are input-output, processing, and direction of flow. Normal direction of flow is from left to right, top to bottom of the page. As long as no deviation is present from the normal flow, no arrows indicating direction are necessary; but if a deviation occurs, arrows are necessary to indicate flow direction.

Let's demonstrate the flowchart with the following problem: Given the set of cards you have been assigned, flowchart the steps we will take to read the cards, and then print them in the same format in which they were read. Let the student suggest each step taken and the kind of symbol required for each step. The instructor will have to lead the thinking of the students since the programming language will enter into flowchart steps.

Build the flowchart in three steps:

1. List the steps to be taken
2. Assign a symbol to each step
3. Connect the symbols with flow lines

The finished flowchart may look something like this:

(OH - Flowchart transparency)

Assignment:

Flowchart the second problem listed in Unit III. The suggested solution is presented at the end of the unit.

UNIT III

USING COBOL PROGRAMMING LANGUAGE

Instructor's Notes

This unit's purpose is to give the student an elementary, yet working knowledge of the COBOL programming language for use in solving library oriented problems.

The method used is as follows: After a brief introduction to the language, the students are led into a "learn by doing" experience in the COBOL language. The initial problems will be very simple with only a few new concepts introduced with each new problem. Divisions of the language will be kept as simple as possible, with only the bare necessities coded. Added experience in keypunching and verification is possible throughout the remaining units of the course.

Resources which are helpful are as follows:

Materials and supplies:

- COBOL coding sheet transparency* with blank overlays
- COBOL sample program*
- COBOL coding sheets*
- Grease pencil*
- Flowchart transparency*
- Flowcharting template*
- Assignment problems
- Suggested solutions included at the end of this unit

Equipment:

- Overhead projector
- Opaque projector
- Chalk board

References:

- McCameron, Fritz A. COBOL LOGIC AND PROGRAMMING, 2d. ed. Homewood, Ill., Richard D. Irwin, 1969.
- IBM SYSTEMS REFERENCE LIBRARY, "IBM System 360 Disk and Tape Operating Systems COBOL Programmer's Guide".
- _____, " ... COBOL Language Specifications".
- IBM DATA PROCESSING TECHNIQUES, "A Data Processing Glossary".*

Class preparation:

All items marked with an asterisk (*) have been previously referred to and are therefore available to this unit.

Duplicate the assignment problems for distribution to the class.

COBOL Programming Language

Identification Division:

Purpose: Identifies the program and the writer, and may state the function of the program.

Required statements: Beginning at the "A" margin unless otherwise noted.

IDENTIFICATIØN DIVISIØN. Nothing else may appear on this line.

PRØGRAM-ID. 'name'. The programmer supplies the name, consisting of from 1 to 30 letters, numbers, and/or hyphens; no spaces or blanks; at least one letter; and not beginning or ending with hyphen.

Optional statements: Beginning at the "A" margin unless otherwise noted.

AUTHOR. your name or initials.

DATE-WRITTEN. date.

DATE-CØMPILED. date.

REMARKS. any statement. If the remarks statement carries over to additional lines, each one starts at the "B" margin.

Environment Division:

Purpose: (a) Defines the computer equipment used to compile the program.

(b) Relates program files to specific computer input-output units.

Required statements: Beginning at the "A" margin, carry-overs at the "B" margin.

ENVIRØNMENT DIVISIØN. (Nothing else may appear on this line.)

CØNFIGURATIØN SECTIØN.

SØURCE-CØMPUTER. IBM-360. (On these two lines you
ØBJECT-CØMPUTER. IBM-360. will note the specific computer you will use.)

INPUT-ØUTPUT SECTIØN.

FILE-CØNTRØL. (Next line, beginning at "B" margin:)

SELECT file-name ASSIGN TØ unit-name. (One statement for each input file, and one for each output file. To assign an input file called CARDS, the statement would be:

SELECT CARDS ASSIGN TØ 'SYS012' UNIT-RECØRD 2540R.

To assign an output file called ADDRESSES, the statement would be:
SELECT ADDRESSES ASSIGN TØ 'SYS014' UNIT-RECØRD 1403.)

Other system unit designations: (Note: These designations may vary from one installation to another. Please check with your computer personnel for those in use.)

Card punch: ... 'SYS012' UNIT-RECØRD 2540P.

Tape input-output: ... 'SYS015' UTILITY 2400 UNIT.
... 'SYS016' UTILITY 2400 UNIT.

Disk input-output: ... 'SYS004' DIRECT ACCESS 2311 UNIT ...
... 'SYS005' DIRECT ACCESS 2311 UNIT....
... 'SYS006' DIRECT ACCESS 2311 UNIT ...

(Note: The disk statements are incomplete for the time being.)

Data Division: (OP - Sample program)

Purpose:
(a) Sets aside those parts of the computer's main memory which may be used by the program and assigns data names to all these areas.
(b) Indicates the required size of each storage area and the type of data to be stored in each.
(c) Shows relationship between file, record, group, and data names, indicating the grouping of certain data and the independence of other fields.
(d) Sets up any constant values required by the program.

Required statements: File descriptions, 01 level groups, and independent items begin with the "A" margin - others and carry-overs at the "B" margin.

(a) A file description for each file named in SELECT statements mentioned in the environment division. (Example:
FD CARDS RECØRDING MØDE IS F, RECØRD CØNTAINS 80 CHARACTERS, LABEL RECØRDS ARE ØMITTED, DATA RECØRD IS CARDS-REC.)
(b) The name, size, and type of data for each storage area required by the program. (Example: see sample program on OP)

Data names: requirements outlined in identification division above.

Nature of data:
(a) Alphabetic - characterized by the letter A (designates letters and spaces only)
(b) Numeric - characterized by the number 9 (designates numerals and some special characters only)
Computational - 9, S, and V only are allowed, and the S and V do not take up storage space imply sign and decimal place.

Report - insertion characters (. , DR CR $ + -) DR and CR take up two positions of storage each, the rest only one. $ + - are insertion characters when not floated.
- replacement characters (Z $ + -) when floated only.

(c) Alphameric - characterized by the letter X (designates letters, numerals, special characters--accepts virtually any character in the entire character set)

Size of data fields:

(a) Indicated by the number of replications of the data nature symbol; for example: 9999 indicates 4 numeric characters

(b) Also indicated by a number within parentheses following the data nature symbol; for example X(10) indicates ten places of alphameric characters

Grouping data: hierarchy in descending order

(a) File
(b) Record
(c) Field
(d) Element
(e) Level numbers
  (1) grouped data (levels 01 through 49)
  (2) independent data (level 77)
  (3) condition names (level 88)

Sections of the data division:

(a) FILE SECTIØN. beginning at "A" margin, carry-overs at "B" margin
  (1) FD file name (all these for card files)
  (2) RECØRDING MØDE IS F
  (3) RECØRD CØNTAINS integer CHARACTERS
  (4) LABEL RECØRDS ARE ØMITTED
  (5) DATA RECØRD IS record name
  (6) 01 record description (Beginning at "A" margin, elements at "B" margin)

(b) WØRKING-STØRAGE SECTIØN. (When used, starts at "A" margin, VALUE option may be used)
  (1) independent data elements
  (2) data groups

Procedure Division:

Purpose: contains the procedural commands which activate the computer, solve the problem, and put out a solution in the form and format specified in the other divisions.

Relationship to flowchart: If the flowchart is carefully drawn, the procedure division is nothing more than a translation of the flowchart into the language being used in the program.

Basic commands: (Beginning at "B" margin)

(a) ØPEN INPUT file-name(s), ØUTPUT file-name(s).
(b) READ file-name AT END imperative command.
(c) MØVE data-name TØ data-name.
(d) WRITE record-name.
(e) CLØSE file-name(s). (All file-names have to be explicitly closed)
(f) STØP RUN.

Other elementary commands:

(a) Arithmetic commands
  (1) ADD data-name(s) TØ data-name.
  (2) SUBTRACT data-name(s) FRØM data-name.
  (3) MULTIPLY data-name BY data-name.
  (4) DIVIDE data-name INTØ data-name.
  (5) CØMPUTE formula with mathematical symbols and/or data-name(s).
(b) GØ TØ paragraph-name.
(c) PERFØRM paragraph-name.
(d) IF conditional expression THEN statement.
(e) DISPLAY 'literal' and/or data-name.

Paragraph names: All paragraph names begin at the "A" margin, and are the only things that begin there in the procedure division. Not longer than 30 characters. Composed of letters, numerals, or hyphen. May not begin or end with hyphen. Begin margin "A" followed by period and space; continued at line B.

Sample Program (OP - Sample program)

Go through the sample program in class step-by-step, answering questions as you explain each step.

Demonstration Program (OH - Coding sheet transparency and overlays;
OH - Flowchart transparency)

Using the flowchart previously drawn, code the program for the first problem listed below. Let the students contribute as much as possible to the building of the program. Have them code their coding sheets as they are discussed in class so they can have them punched into cards for running. This encourages the student and gives him needed confidence by an early and successful computer run.

Assignment Problems (Flowchart each problem before programming)

A. Using the cards punched and verified above, read the cards for each student registered and print out a list of all the information on the cards. (Version 1, unformatted printout, demonstration; Version 2, formatted printout, group problem.)

B. Using the same cards, print out the home addresses of the registrants in three line format as follows:

name
street or P. O.
city, state zip

C. Using the same cards, print out the names, campus addresses, and campus telephone numbers of all the women in the class, and count the number of men in the class. Design your own output format, but at the end of the address list program the computer to write THERE ARE number MEN REGISTERED IN THIS LIBRARY.

D. Again, using the same cards, print out in one line the sequence number, name, campus address, campus telephone number, classification, college, and sex of each registrant. Place an appropriate heading across the top of the page(s) of the print out, and convert the codes used in the cards prior to printing the list itself.

Suggested Solution
Problem A, Version 1

Instructor's Notes:

This should be a classroom demonstration program. Let the students contribute ideas in drawing up the flowchart, and in constructing the program. One of the objects of this method is to assure that all your students have an early success at running a program. This will be a very simple and basic program which prints information from cards on the printer. It may also be used as your sample program projected on the previous page.

The only new information required here is the AFTER option in a WRITE statement. This had to be introduced to keep the printer from over-printing on the Core-Address table. Be sure to point out that the AFTER option (or AFTER ADVANCING, if you prefer) is valuable only when using the printer as the output medium.

Class preparation:

Duplicate all class address cards so that each student can have a complete set.

Parameters:

Input:

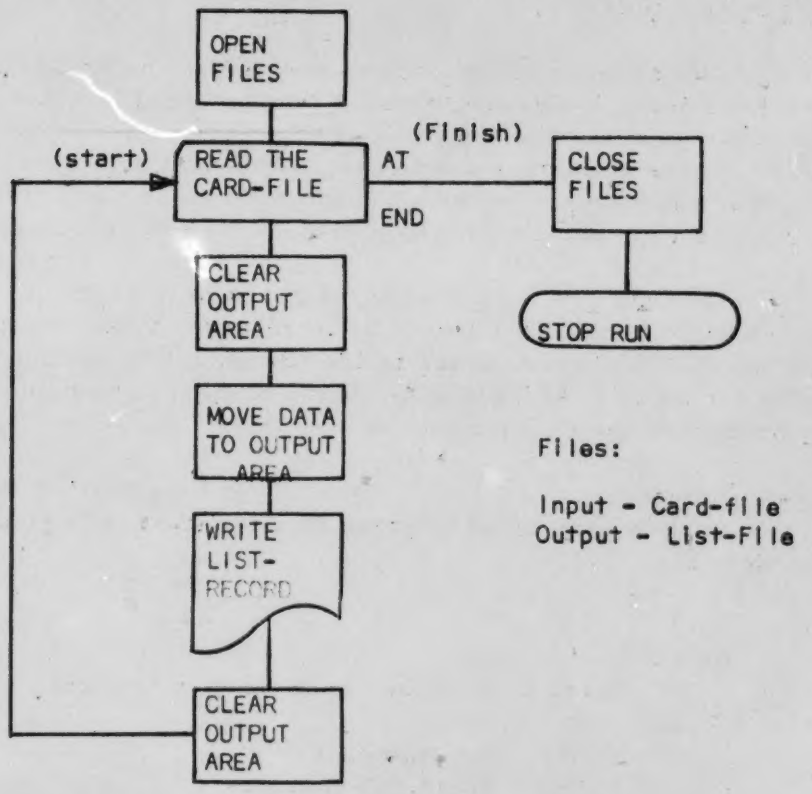
Same as address cards already prepared

Output:

Filler, one character
Printed output, 80 characters
Filler, 52 characters.

Instructions:

See Assignment Problem A, version 1 on page 18.



Suggested Solution
Problem A, Version I
Flowchart

Suggested Solution, Problem A, Version 1, Program

```
NO. SEQ. NO.          SOURCE STATEMENT                          COBOL CL1-7 05/07/70

  1   001010 IDENTIFICATION DIVISION.
  2   001020 PROGRAM-ID. 'REGLIST'.
  3   001030 AUTHOR. SAC.
  4   001040 REMARKS. SUGGESTED SOLUTION TO UNIT III, PROBLEM A, VERSION 1.
  5   001050 ENVIRONMENT DIVISION.
  6   001060 CONFIGURATION SECTION.
  7   001070 SOURCE-COMPUTER. IBM-360.
  8   001080 OBJECT-COMPUTER. IBM-360.
  9   001090 INPUT-OUTPUT SECTION.
 10   001095 FILE-CONTROL.
 11   001100     SELECT CARD-FILE ASSIGN TO 'SYS012' UNIT-RECORD 2540R.
 12   001110     SELECT LIST-FILE ASSIGN TO 'SYS014' UNIT-RECORD 1403.
 13   001120 DATA DIVISION.
 14   001130 FILE SECTION.
 15   001140 FD  CARD-FILE RECORDING MODE IS F, RECORD CONTAINS 80 CHARACTERS,
 16   001150     LABEL RECORDS ARE OMITTED, DATA RECORD IS CARD-RECORD.
 17   001160 01  CARD-RECORD.
 18   001170     02  INFORMATION-IN  PICTURE X(80).
 19   002010 FD  LIST-FILE RECORDING MODE IS F, RECORD CONTAINS 133 CHARACTERS
 20   002020     LABEL RECORDS ARE OMITTED, DATA RECORDS ARE LIST-RECORD.
 21   002030 01  LIST-RECORD.
 22   002040     02  FILLER          PICTURE X.
 23   002050     02  INFORMATION-OUT PICTURE X(80).
 24   002060     02  FILLER          PICTURE X(52).
 25   003010 PROCEDURE DIVISION.
 26   003020     OPEN INPUT CARD-FILE, OUTPUT LIST-FILE.
 27   003030 START. READ CARD-FILE AT END GO TO FINISH.
 28   003040     MOVE SPACES TO LIST-RECORD.
 29   003050     MOVE CARD-RECORD TO INFORMATION-OUT.
 30   003060     WRITE LIST-RECORD AFTER 1 LINES.
 31   003070     MOVE SPACES TO LIST-RECORD.
 32   003080     GO TO START.
 33   003090 FINISH. CLOSE CARD-FILE, LIST-FILE.
 34   003100     STOP RUN.
```

Suggested Solution, Problem A, Version 1, Printout

```
CS/C7/7C  PHASE  XFR-AD  LOCCRE  HICCRE  DSK-AD  ESC TYPE  LABEL     LOADED  REL-FR

          PHASE***  CC2EAC  CC2400  C031A7  67 C7 1  CSECT     IHC03700  002800  CC2400
                                                    *  ENTRY     IHC03701  002800
                                                    *  ENTRY     IHC03702  002810
                                                       ENTRY     IHC03704  00299C

                                                    CSECT     REGLIST   002AB8  CC2AB8

                                                    CSECT     IJCFZ110  003C08  CC300P

                                                    CSECT     IJCFAPIZ  003090  CC3090
                                                    *  ENTRY  IJCFAZIZ  003090

CC0112HUGH T. ABERCROMBIE          ROUTE 1                                255-716231M  1
CC0112ATHENS, LOUISIANA         71214P. C. BOX 1776, TECH STATION         257-7163     2
CC0157LARAINE F. ACAIR             1541 SOUTH AVENUE                      255-133222F  1
CC0157MEMPHIS, TENNESSEE        38117P. C. BOX 444, TECH STATION          257-1332     2
CC0159SANDRA DIANE ACAIR           GENERAL DELIVERY                       295-289113F  1
CC0159SAN JUAN PUERTO RICO      00911P. C. BOX 126, TECH STATION          257-2491     2
CC024CGERALD LOYD ADAMS            210P RCSE AVENUE                       371-482644M  1
CC024CRICHLAND, MARYLAND        11278GENERAL DELIVERY, TECH STA.          257-7113     2
CC025SJUDITH ANN ADAMS             2148 AVENUE C                          202-202055F  1
CC025SWASHINGTON, D. C.         20202GENERAL DELIVERY, TECH STA.          257-202C     2
CC05CODIANE ATKINS                 7057 NORTH SEVENTH STREET              384-216766F  1
CC05CCMC COMP, MISSISSIPPI      51189P. C. BOX 469, TECH STATION          257-1182     2
CC0605DONNA LYNN AFFMAN            703 WEST MISSISSIPPI                   255-114855F  1
CC06C5RUSTON, LOUISIANA         71270703 WEST MISSISSIPPI                 255-1148     2
CC0625HASSAN AHMADI                BOX 11157                                  64M  1
CC0625TALMEDI, INDIA            00000111 WEST ARIZONA STREET              255-5555     2
CC07CCHOWARD EARL AIKEN, JR.       2149 SOUTHFIELD DRIVE                  422-800C03M  1
CC07CCSHREVEPORT, LOUISIANA     71010P. C. BOX 647, TECH STATION          257-1128     2
CC0729LEO EDMUND ALBANO, JR.       901 WEST CALIFORNIA                    255-1228 2M  1
CC0729RUSTON, LOUISIANA         71270901 WEST CALIFORNIA                  255-1228     2
CC0B0CEDDIE E. ALBRITTON           2107 RECHED STREET                     504-928113M  1
CC0B0CDURANGO, COLORADO         81070302 WEST CALIFORNIA                  255-9281     2
040C6BPATRICIA LYNN HENRY          304 ACRRIS CRICE                       255-042824F  1
040B43RUSTON, LOUISIANA         71270P. C. BOX 697, TECH STATION          257-0428     2
C40135TOMMIE DAVIS HERREN                                                 777-462135F  1
C40135DUBACH, LOUISIANA         71250DUBACH, LOUISIANA                    777-4621     2
C4C270TERRY FORD HESSICK           4720 ORANGE DRIVE                      .94-376246M  1
C4C27CSPENCER, NEW HAMPSHIRE    01173P. C. BOX 4729, TECH STATION         257-3287     2
C40287JAMES HETHERWICK             AC. 2C WHITE HOUSE APTS.               255-463059M  1
C40287RUSTON, LOUISIANA         71270AC. 2C WHITE HOUSE APTS.             255-463C     2
C59162FAYE BLAIN MASSICOT          2 NORTHWOOD AVENUE                     219-832164F  1
C59182HOLLYWOOD, TEXAS          79421P. C. BOX 1127, TECH STATION         257-4418     2
C59265WAYNE N. MATHEWS             WHITTLESEY STREET                      579-431173M  1
C59265MIAMI, OHIO               81204P. C. BOX 4181, TECH STATION         255-4321     2
C59925G. L. MEARS                  3121 NANCY STREET                      318-407382M  1
C59925PARIS, ARIZONA            84417P. C. BOX 4112, TECH STATION         255-8107     2
C5S58SELIZABETH A. B. MEEK         BOX 56                                 242-170691F  1
C59989CHOCTAW, LOUISIANA        71273BOX 56, CHOCTAW, LOUISIANA           242-1706     2
C601CCEUNICE ELAINE MELTON         7327 NICE STREET                       921-763902F  1
C601CCCLEAN, WYOMING            83546P. C. BOX 4167, TECH STATION         257-0862     2
```

Suggested Solution
Problem A, Version 2

Instructor's Notes:

The purpose of this problem is to show how to format output so that it is more readable, and to control the carriage on the printer. This problem, and perhaps the next one, should be "group" problems; that is, the class could be organized into smaller groups, and each group submit suggested flowcharts and solutions to the class. In this manner all the problems can be completed for this unit. You can use your own judgement in this matter, but if the class seems to progress rapidly, and everyone seems to understand the concepts presented thus far, individual solutions are in order as soon as possible.

New devices used for the first time are decision (IF ... ELSE ...) statements, numeric literals, the relation tests (GREATER THAN, EQUAL TO, LESS THAN, either in words or symbols), and the WØRKING-STØRAGE SECTIØN to set aside space for a counter with a value clause. The meaning of these devices can best be explained in the context of a specific problem.

Class Preparation:

No special preparation required. The address cards already prepared will still be useful.

Parameters:

Input:

Same as for Version 1

Output: (formatted)

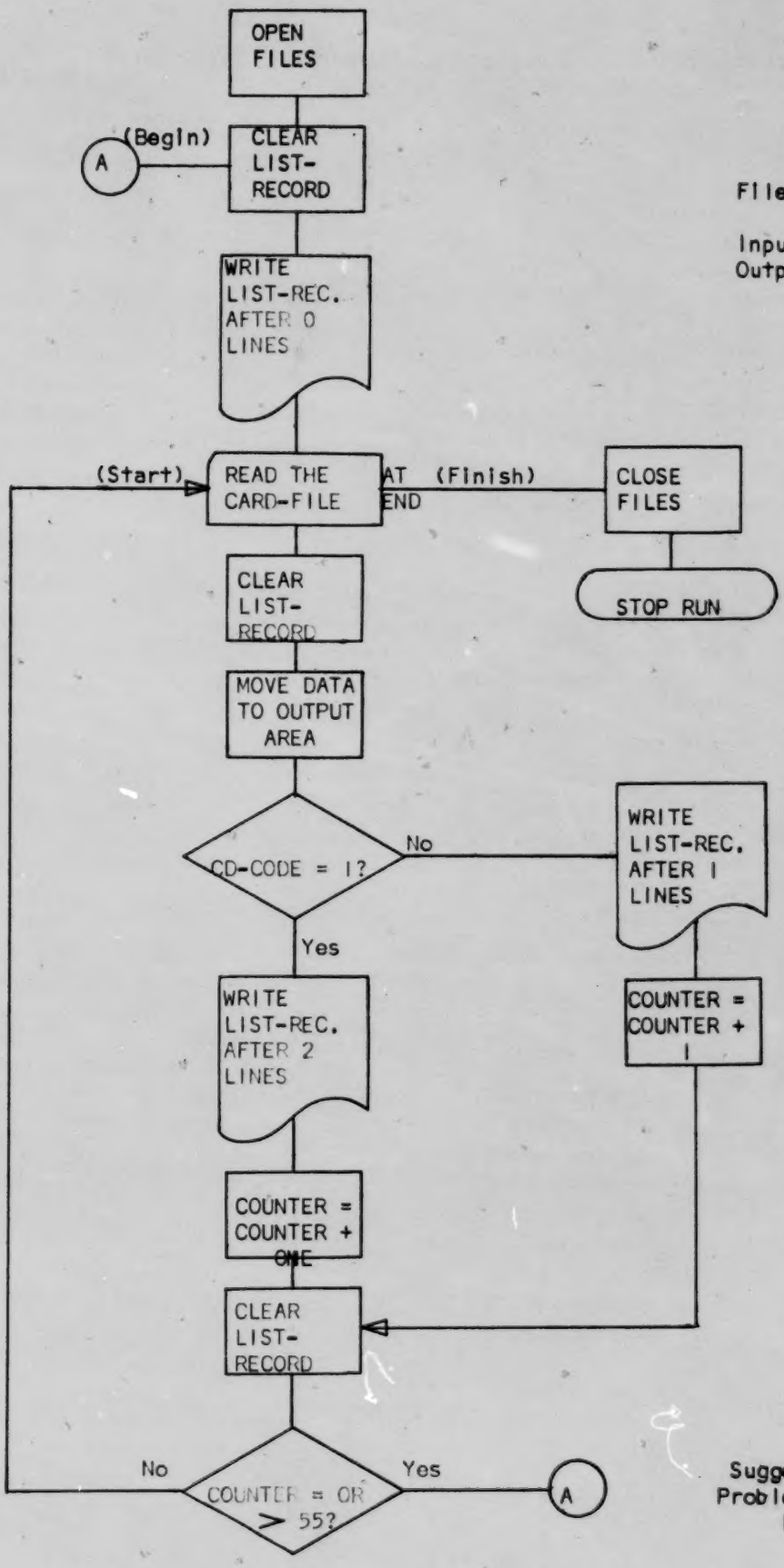
Filler	7 characters
Sequence number	6 characters
Filler	6 characters
Name	30 characters
Filler	6 characters
Address	30 characters
Filler	6 characters
Telephone	8 characters
Filler	6 characters

Codes:

Class	1 character
Filler	6 characters
College	1 character
Filler	6 characters
Sex	1 character
Filler	6 characters
Card Code	1 character
Filler	6 characters

Instructions:

Write a program which will format the output according to the above parameters, and control the carriage on the printer so that overprinting the page will never occur.



Files:

Input - Card-File
Output - List-File

Suggested Solution
Problem A, Version 2
Flowchart

Suggested Solution, Problem A, Version 2, Program

```
LINE NO. SEQ. NO.        SOURCE STATEMENT                                  COBOL CL3-7 09/01/70

    1   001010 IDENTIFICATION DIVISION.
    2   001020 PROGRAM-ID. 'REGLIST2'.
    3   001030 AUTHOR. SAD.
    4   001040 REMARKS. SUGGESTED SOLUTION TO UNIT III, PROBLEM A, VERSION 2 -
    5   001042     THIS VERSION FORMATS THE OUTPUT FOR EASE OF READING AND
    6   001044     CONTROLS THE CARRIAGE ON THE PRINTER.
    7   001050 ENVIRONMENT DIVISION.
    8   001060 CONFIGURATION SECTION.
    9   001070 SOURCE-COMPUTER. IBM-360.
   10   001080 OBJECT-COMPUTER. IBM-360.
   11   001090 INPUT-OUTPUT SECTION.
   12   001095 FILE-CONTROL.
   13   001100     SELECT CARD-FILE ASSIGN TO 'SYS012' UNIT-RECORD 2540R.
   14   001110     SELECT LIST-FILE ASSIGN TO 'SYS014' UNIT-RECORD 1403.
   15   001120 DATA DIVISION.
   16   001130 FILE SECTION.
   17   001140 FD  CARD-FILE RECORDING MODE IS F, RECORD CONTAINS 80 CHARACTERS,
   18   001150     LABEL RECORDS ARE OMITTED, DATA RECORD IS CARD-RECORD.
   19   001160 01  CARD-RECORD.
   20   001170     02  SEC-NO          PICTURE 9(6).
   21   001180     02  NAME            PICTURE X(30).
   22   001190     02  HOME-ADD        PICTURE X(30).
   23   001200     02  HOME-TEL        PICTURE X(8).
   24   001210     02  CODES.
   25   001220         03  CLASS       PICTURE X.
   26   001230         03  COLLEGE     PICTURE X.
   27   001240         03  SEX         PICTURE X.
   28   001250         03  BLANK       PICTURE XX.
   29   001260         03  CD-CODE     PICTURE X.
   30   002010 FD  LIST-FILE RECORDING MODE IS F, RECORD CONTAINS 133 CHARACTERS
   31   002020     LABEL RECORDS ARE OMITTED, DATA RECORDS ARE LIST-RECORD.
   32   002030 01  LIST-RECORD.
   33   002040     02  FILLER          PICTURE X(7).
   34   002050     02  S-NUM           PICTURE 9(6).
   35   002060     02  FILLER          PICTURE X(6).
   36   002070     02  NAMES           PICTURE X(30).
   37   002080     02  FILLER          PICTURE X(6).
   38   002090     02  ADDRESS         PICTURE X(30).
   39   002100     02  FILLER          PICTURE X(6).
   40   002110     02  TELEPHONE       PICTURE X(8).
   41   002120     02  FILLER          PICTURE X(6).
   42   002130     02  CODE.
   43   002140         03  CLASSES     PICTURE X.
   44   002150         03  FILLER      PICTURE X(6).
   45   002160         03  COLLEGES    PICTURE X.
   46   002170         03  FILLER      PICTURE X(6).
   47   002180         03  SX          PICTURE X.
   48   002190         03  FILLER      PICTURE X(6).
   49   002200         03  CARD-CD     PICTURE X.
   50   002210         03  FILLER      PICTURE X(6).
   51   002220 WORKING-STORAGE SECTION.
   52   002230 77  COUNTER          PICTURE 99    VALUE ZERO.
   53   003010 PROCEDURE DIVISION.
   54   003020     OPEN INPUT CARD-FILE, OUTPUT LIST-FILE.
   55   003030 BEGIN. MOVE SPACES TO LIST-RECORD.
   56   003040     WRITE LIST-RECORD AFTER 0 LINES.
   57   003045     COMPUTE COUNTER = 1.
   58   003050 START. READ CARD-FILE AT END GO TO FINISH.
   59   003060     MOVE SPACES TO LIST-RECORD.
   60   003070     MOVE SEC-NO TO S-NUM.
   61   003080     MOVE NAME TO NAMES.
   62   003090     MOVE HOME-ADD TO ADDRESS.
   63   003100     MOVE HOME-TEL TO TELEPHONE.
   64   003110     MOVE CLASS TO CLASSES.
   65   003120     MOVE COLLEGE TO COLLEGES.
   66   003130     MOVE SEX TO SX.
   67   003140     MOVE CD-CODE TO CARD-CD.
   68   003150     IF CD-CODE EQUAL TO 1, WRITE LIST-RECORD AFTER 2 LINES.
   69   003155     COMPUTE COUNTER = COUNTER + 2, ELSE WRITE LIST-RECORD AFTER
   70   003157     1 LINES, COMPUTE COUNTER = COUNTER + 1.
   71   003160     MOVE SPACES TO LIST-RECORD.
   72   003180     IF COUNTER EQUAL TO 55 OR COUNTER GREATER THAN 55 GO TO BEGIN
   73   003190         ELSE GO TO START.
   74   003200 FINISH.  CLOSE CARD-FILE, LIST-FILE.
   75   003210     STOP RUN.
```

Suggested Solution, Problem A, Version 2, Printout

C010C0	SAM A. DYSON		2 WESTWOOD HILLS	255-2557	7	2	M	1
C010C0	RUSTON, LOUISIANA	71270	PRESCOTT LIBRARY	257-2577				2
C010C0	SAM A. DYSON		2 WESTWOOD HILLS	255-2557	7	2	M	1
C010C0	RUSTON, LOUISIANA	71270	PRESCOTT LIBRARY	257-2577				2
C010C0	SAM A. DYSON		2 WESTWOOD HILLS	255-2557	7	2	M	1
C010C0	RUSTON, LOUISIANA	71270	PRESCOTT LIBRARY	257-2577				2
C010C0	SAM A. DYSON		2 WESTWOOD HILLS	255-2557	7	2	M	1
C010C0	RUSTON, LOUISIANA	71270	PRESCOTT LIBRARY	257-2577				2
C010C0	SAM A. DYSON		2 WESTWOOD HILLS	255-2557	7	2	M	1
C010C0	RUSTON, LOUISIANA	71270	PRESCOTT LIBRARY	257-2577				2
C010C0	SAM A. DYSON		2 WESTWOOD HILLS	255-2557	7	2	M	1
C010C0	RUSTON, LOUISIANA	71270	PRESCOTT LIBRARY	257-2577				2
C010C0	SAM A. DYSON		2 WESTWOOD HILLS	255-2557	7	2	M	1
C010C0	RUSTON, LOUISIANA	71270	PRESCOTT LIBRARY	257-2577				2
C010C0	SAM A. DYSON		2 WESTWOOD HILLS	255-2557	7	2	M	1
C010C0	RUSTON, LOUISIANA	71270	PRESCOTT LIBRARY	257-2577				2
C010C0	SAM A. DYSON		2 WESTWOOD HILLS	255-2557	7	2	M	1
C010C0	RUSTON, LOUISIANA	71270	PRESCOTT LIBRARY	257-2577				2
C010C0	SAM A. DYSON		2 WESTWOOD HILLS	255-2557	7	2	M	1
C010C0	RUSTON, LOUISIANA	71270	PRESCOTT LIBRARY	257-2577				2
C010C0	SAM A. DYSON		2 WESTWOOD HILLS	255-2557	7	2	M	1
C010C0	RUSTON, LOUISIANA	71270	PRESCOTT LIBRARY	257-2577				2
C010C0	SAM A. DYSON		2 WESTWOOD HILLS	255-2557	7	2	M	1
C010C0	RUSTON, LOUISIANA	71270	PRESCOTT LIBRARY	257-2577				2
C010C0	SAM A. DYSON		2 WESTWOOD HILLS	255-2557	7	2	M	1
C010C0	RUSTON, LOUISIANA	71270	PRESCOTT LIBRARY	257-2577				2
C010C0	SAM A. DYSON		2 WESTWOOD HILLS	255-2557	7	2	M	1
C010C0	RUSTON, LOUISIANA	71270	PRESCOTT LIBRARY	257-2577				2
C010C0	SAM A. DYSON		2 WESTWOOD HILLS	255-2557	7	2	M	1
C010C0	RUSTON, LOUISIANA	71270	PRESCOTT LIBRARY	257-2577				2
C010C0	SAM A. DYSON		2 WESTWOOD HILLS	255-2557	7	2	M	1
C010C0	RUSTON, LOUISIANA	71270	PRESCOTT LIBRARY	257-2577				2
C010C0	SAM A. DYSON		2 WESTWOOD HILLS	255-2557	7	2	M	1
C010C0	RUSTON, LOUISIANA	71270	PRESCOTT LIBRARY	257-2577				2
C010C0	SAM A. DYSON		2 WESTWOOD HILLS	255-2557	7	2	M	1
C010C0	RUSTON, LOUISIANA	71270	PRESCOTT LIBRARY	257-2577				2
C010C0	SAM A. DYSON		2 WESTWOOD HILLS	255-2557	7	2	M	1
C010C0	RUSTON, LOUISIANA	71270	PRESCOTT LIBRARY	257-2577				2
C010C0	SAM A. DYSON		2 WESTWOOD HILLS	255-2557	7	2	M	1
C010C0	RUSTON, LOUISIANA	71270	PRESCOTT LIBRARY	257-2577				2
C010C0	SAM A. DYSON		2 WESTWOOD HILLS	255-2557	7	2	M	1
C010C0	RUSTON, LOUISIANA	71270	PRESCOTT LIBRARY	257-2577				2
C010C0	SAM A. DYSON		2 WESTWOOD HILLS	255-2557	7	2	M	1
C010C0	RUSTON, LOUISIANA	71270	PRESCOTT LIBRARY	257-2577				2

Suggested Solution
Problem B

Instructor's Notes:

The purpose of this problem is to show that only selected information need be used from the data cards. It also shows how to format output in "mailing label" arrangement, pulling selected information from two different cards, and outputting it in three lines. The logic used here is common when biographical and/or bibliographical data are used.

No new devices are used, but the logic used to present the format required is new and very important for library automation.

Class preparation:

No special preparation required. The address cards already prepared will still be useful.

Parameters:

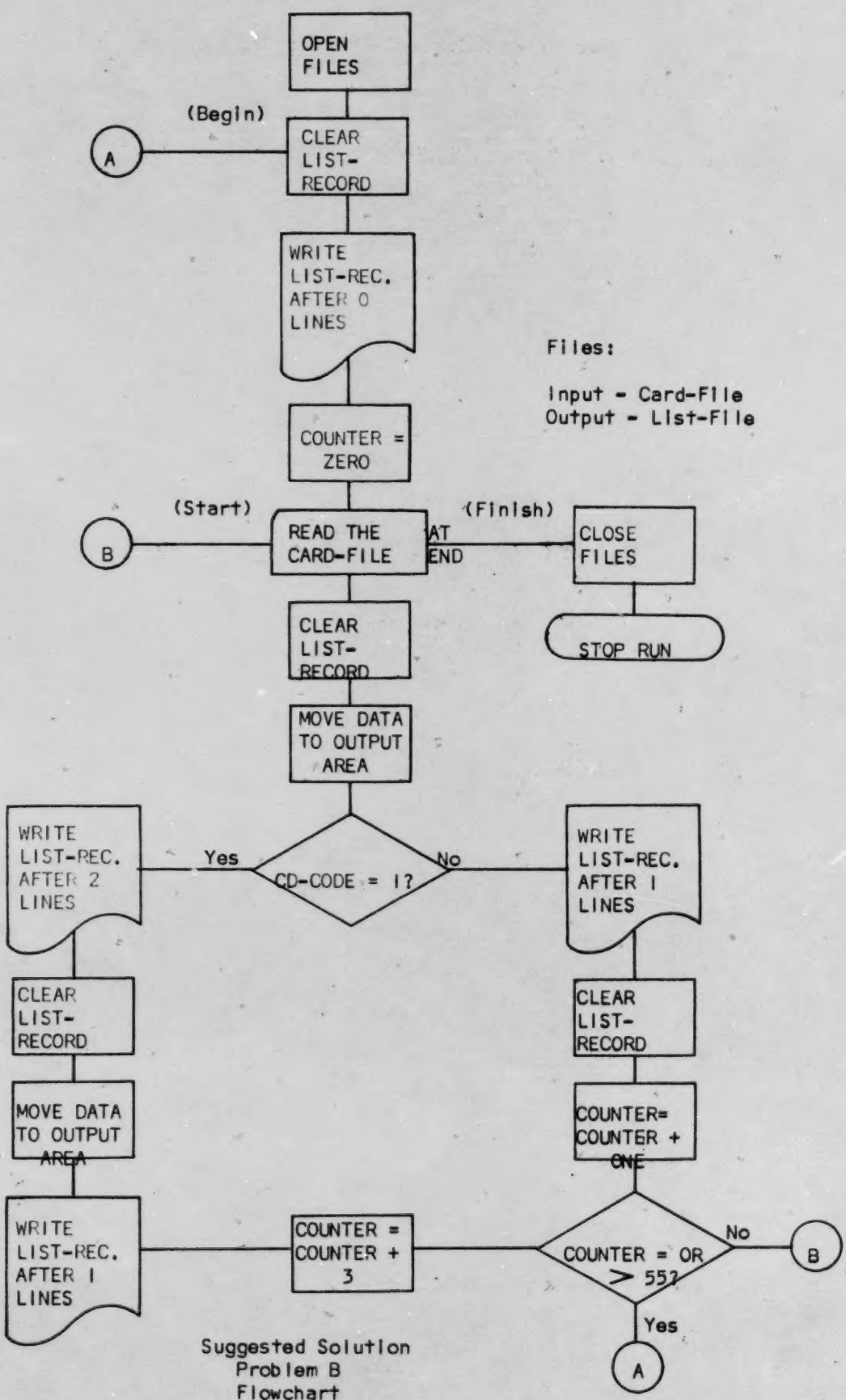
Input:
Address cards previously prepared

Output: (hint)

Filler	10 characters
Output information	30 characters
Filler	93 characters

Instructions:

See Assignment Problem B, page 18.



Suggested Solution
Problem B
Flowchart

Suggested Solution, Problem B, Program

```
LINE NO.  SEQ. NO.        SOURCE STATEMENT                              COBOL CL3-7 09/03/70

    1     001010 IDENTIFICATION DIVISION.
    2     001020 PROGRAM-ID. 'MACDLIST'.
    3     001030 AUTHOR. SAD.
    4     001040 REMARKS. SUGGESTED SOLUTION TO UNIT 3, PROBLEM B.
    5     001050 ENVIRONMENT DIVISION.
    6     001060 CONFIGURATION SECTION.
    7     001070 SOURCE-COMPUTER. IBM-360.
    8     001080 OBJECT-COMPUTER. IBM-360.
    9     001090 INPUT-OUTPUT SECTION.
   10     001095 FILE-CONTROL.
   11     001100     SELECT CARD-FILE ASSIGN TO 'SYS012' UNIT-RECORD 2540R.
   12     001110     SELECT LIST-FILE ASSIGN TO 'SYS014' UNIT-RECORD 1403.
   13     001120 DATA DIVISION.
   14     001130 FILE SECTION.
   15     001140 FD  CARD-FILE RECORDING MODE IS F, RECORD CONTAINS 80 CHARACTERS,
   16     001150     LABEL RECORDS ARE OMITTED, DATA RECORD IS CARD-RECORD.
   17     001160 01  CARD-RECORD.
   18     001170     02  SEQ-NO          PICTURE 9(6).
   19     001180     02  NAME            PICTURE X(30).
   20     001190     02  HOME-ADD        PICTURE X(30).
   21     001200     02  HOME-TEL        PICTURE X(10).
   22     001210     02  CODES.
   23     001220         03  CLASS       PICTURE X.
   24     001230         03  COLLEGE     PICTURE X.
   25     001240         03  SEX         PICTURE X.
   26     001250         03  BLANK       PICTURE XX.
   27     001260         03  CO-CODE     PICTURE X.
   28     001270 FD  LIST-FILE RECORDING MODE IS F, RECORD CONTAINS 133 CHARACTERS
   29     001280     LABEL RECORDS ARE OMITTED, DATA RECORDS ARE LIST-RECORD.
   30     001290 01  LIST-RECORD.
   31     001300     02  FILLER          PICTURE X(10).
   32     001310     02  OUTPUT-AREA     PICTURE X(30).
   33     001320     02  FILLER          PICTURE X(93).
   34     001330 WORKING-STORAGE SECTION.
   35     001340 77  COUNTER             PICTURE 99      VALUE ZERO.
   36     001350 PROCEDURE DIVISION.
   37     001360     OPEN INPUT CARD-FILE, OUTPUT LIST-FILE.
   38     001370 BEGIN. MOVE SPACES TO LIST-RECORD.
   39     001380     WRITE LIST-RECORD AFTER 0 LINES.
   40     001390     COMPUTE COUNTER = 0.
   41     001400 START. READ CARD-FILE AT END GO TO FINISH.
   42     001410     MOVE SPACES TO LIST-RECORD.
   43     002010     IF CO-CODE = 1 GO TO PROC-1, ELSE GO TO PROC-2.
   44     002020 PROC-1. MOVE NAME TO OUTPUT-AREA.
   45     002030     WRITE LIST-RECORD AFTER 2 LINES.
   46     002040     MOVE SPACES TO LIST-RECORD.
   47     002050     MOVE HOME-ADD TO OUTPUT-AREA.
   48     002060     WRITE LIST-RECORD AFTER 1 LINES.
   49     002070     COMPUTE COUNTER = COUNTER + 3.
   50     002080     IF COUNTER EQUAL TO 55 OR COUNTER GREATER THAN 55 GO TO BEGIN
   51     002090     ELSE GO TO START.
   52     002100 PROC-2. MOVE NAME TO OUTPUT-AREA.
   53     002110     WRITE LIST-RECORD AFTER 1 LINES.
   54     002120     MOVE SPACES TO LIST-RECORD.
   55     002130     COMPUTE COUNTER = COUNTER + 1.
   56     002140     IF COUNTER EQUAL TO 55 OR COUNTER GREATER THAN 55 GO TO BEGIN
   57     002150     ELSE GO TO START.
   58     002160 FINISH. CLOSE CARD-FILE, LIST-FILE.
   59     002170     STOP RUN.
```

Suggested Solution, Problem B, Printout

SAM A. CYSON
2 WESTWOOC HILLS
RLSTON, LOLISIANA 71270

SAM A. CYSON
2 WESTWOOC HILLS
RLSTON, LOLISIANA 71270

SAM A. CYSON
2 WESTWOOC HILLS
RLSTON, LOLISIANA 71270

SAM A. CYSON
2 WESTWOOC HILLS
RLSTON, LOLISIANA 71270

SAM A. CYSON
2 WESTWOOC HILLS
RLSTON, LOLISIANA 71270

SAM A. CYSON
2 WESTWOOC HILLS
RLSTON, LOLISIANA 71270

SAM A. CYSON
2 WESTWOOC HILLS
RLSTON, LOLISIANA 71270

SAM A. CYSON
2 WESTWOOC HILLS
RUSTON, LOLISIANA 71270

SAM A. CYSON
2 WESTWOOC HILLS
RLSTON, LOLISIANA 71270

SAM A. CYSON
2 WESTWOOC HILLS
RLSTON, LOUISIANA 71270

SAM A. CYSON
2 WESTWOOC HILLS
RUSTON, LOUISIANA 71270

SAM A. CYSON
2 WESTWOOC HILLS
RLSTON, LOUISIANA 71270

SAM A. CYSON
2 WESTWOOC HILLS
RLSTON, LOLISIANA 71270

SAM A. CYSON
2 WESTWOOC HILLS
RLSTON, LOUISIANA 71270

SAM A. CYSON
2 WESTWOOC HILLS
RLSTON, LOLISIANA 71270

SAM A. CYSON
2 WESTWOOC HILLS
RLSTON, LOUISIANA 71270

SAM A. CYSON
2 WESTWOOC HILLS
RLSTON, LOLISIANA 71270

SAM A. CYSON
2 WESTWOOC HILLS
RLSTON, LOLISIANA 71270

SAM A. CYSON
2 WESTWOOC HILLS
RLSTON, LOUISIANA 71270

Suggested Solution
Problem C

Instructor's Notes:

The main purpose of this problem is to show how to manipulate data selected from a file, count according to certain definite specifications, and print the desired data and a statement giving a total count.

New devices used are the DISPLAY ... statement with both literal and computed elements, and non-numeric literals.

Class Preparation:

No new preparation -- the same address cards will be used.

Parameters:

Input:

Same as in previous problems.

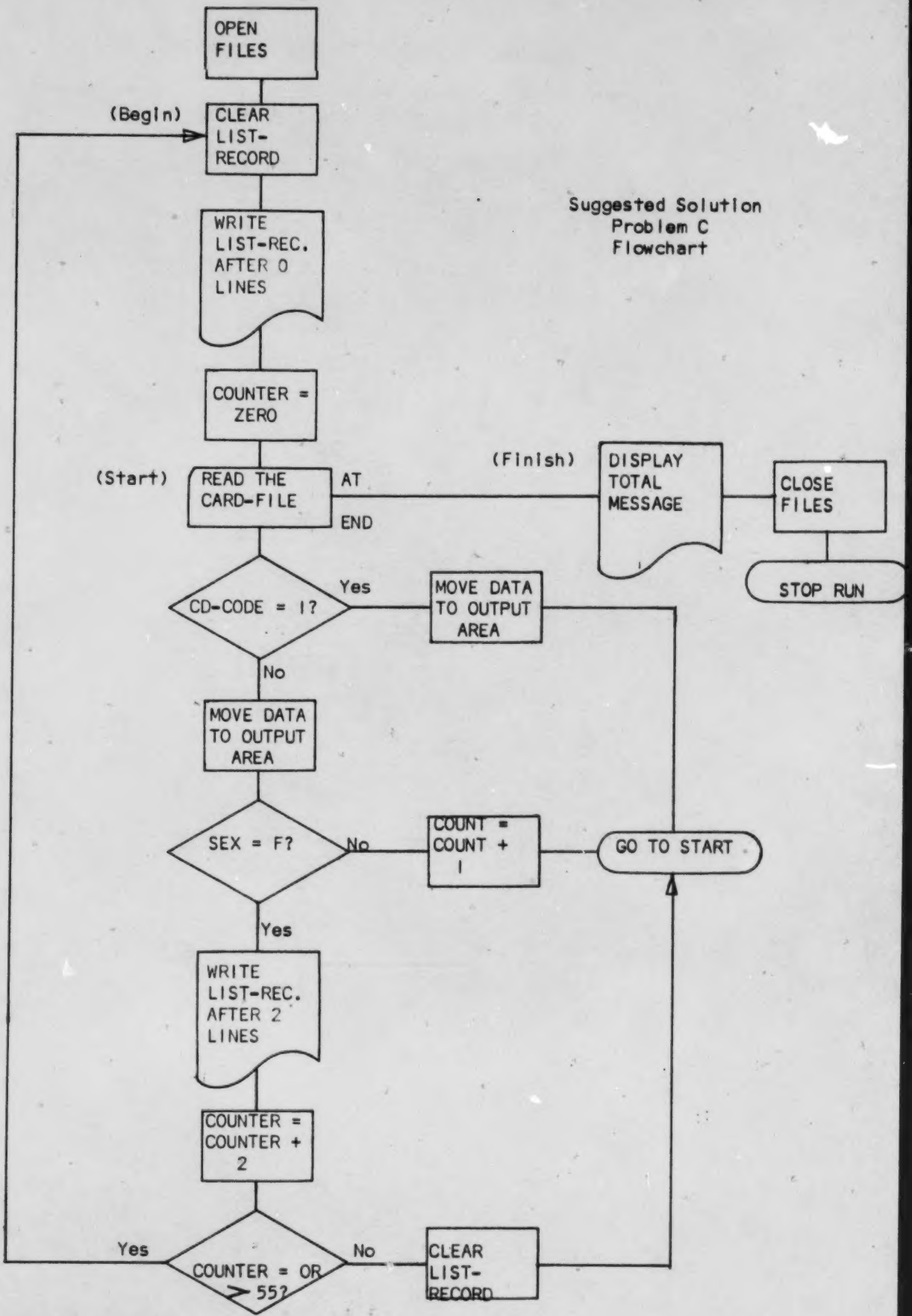
Output:

(Design your own)

Instructions:

See page 18 , Assignment Problem C.

Suggested Solution
Problem C
Flowchart



Suggested Solution, Problem C, Program

```
LINE NO. SEQ. NO.          SOURCE STATEMENT                          COBOL CL3-7 09/04/70

      1   001010 IDENTIFICATION DIVISION.
      2   001020 PROGRAM-ID. 'FEPLIST'.
      3   001030 AUTHOR. SAD.
      4   001040 REMARKS. SUGGESTED SOLUTION TO UNIT 3, PROBLEM C.
      5   001050 ENVIRONMENT DIVISION.
      6   001060 CONFIGURATION SECTION.
      7   001070 SOURCE-COMPUTER. IBM-360.
      8   001080 OBJECT-COMPUTER. IBM-360.
      9   001090 INPUT-OUTPUT SECTION.
     10   001095 FILE-CONTROL.
     11   001100     SELECT CARD-FILE ASSIGN TO 'SYS012' UNIT-RECORD 2540R.
     12   001110     SELECT LIST-FILE ASSIGN TO 'SYS014' UNIT-RECORD 1403.
     13   001120 DATA DIVISION.
     14   001130 FILE SECTION.
     15   001140 FD  CARD-FILE RECORDING MODE IS F, RECORD CONTAINS 80 CHARACTERS,
     16   001150     LABEL RECORDS ARE OMITTED, DATA RECORD IS CARD-RECORD.
     17   001160 01  CARD-RECORD.
     18   001170     02  SEC-NO          PICTURE 9(6).
     19   001180     02  NAME            PICTURE X(30).
     20   001190     02  HOME-ADD        PICTURE X(30).
     21   001200     02  HOME-TEL        PICTURE X(8).
     22   001210     02  CODES.
     23   001220         03  CLASS       PICTURE X.
     24   001230         03  COLLEGE     PICTURE X.
     25   001240         03  SEX         PICTURE X.
     26   001250         03  BLANK       PICTURE XX.
     27   001260         03  CO-CODE     PICTURE X.
     28   001270 FD  LIST-FILE RECORDING MODE IS F, RECORD CONTAINS 133 CHARACTERS
     29   001280     LABEL RECORDS ARE OMITTED, DATA RECORDS ARE LIST-RECORD.
     30   001290 01  LIST-RECORD.
     31   001300     02  FILLER          PICTURE X(10).
     32   001310     02  NAMES           PICTURE X(30).
     33   001320     02  FILLER          PICTURE X(5).
     34   001330     02  C-ADD           PICTURE X(30).
     35   001340     02  FILLER          PICTURE X(9).
     36   001350     02  C-TEL           PICTURE X(8).
     37   001360     02  FILLER          PICTURE X(45).
     38   001370 WORKING-STORAGE SECTION.
     39   001380 77  COUNTER             PICTURE 99  VALUE ZERO.
     40   001390 77  COUNT               PICTURE 99  VALUE ZERO.
     41   001395 77  S-X                 PICTURE X     VALUE SPACE.
     42   001400 PROCEDURE DIVISION.
     43   001410     OPEN INPUT CARD-FILE, OUTPUT LIST-FILE.
     44   001420 BEGIN. MOVE SPACES TO LIST-RECORD.
     45   001430     WRITE LIST-RECORD AFTER 0 LINES.
     46   001435     MOVE SPACES TO LIST-RECORD.
     47   001440     COMPUTE COUNTER = 0.
     48   001450 START. READ CARD-FILE AT END GO TO FINISH.
     49   001460     IF CO-CODE = 1 MOVE NAME TO NAMES, MOVE SEX TO S-X, GO TO
     50   001465     START, ELSE MOVE
     51   001470     HOME-ADD TO C-ADD, MOVE HOME-TEL TO C-TEL.
     52   001480     IF S-X = 'F' WRITE LIST-RECORD AFTER 2 LINES, COMPUTE COUNTER
     53   001490     = COUNTER + 2, ELSE COMPUTE COUNT = COUNT + 1, GO TO START.
     54   001500     IF COUNTER EQUAL TO 55 OR COUNTER GREATER THAN 55, GO TO
     55   001510     BEGIN, ELSE GO TO START.
     56   001520 FINISH. MOVE SPACES TO LIST-RECORD.
     57   001522     WRITE LIST-RECORD AFTER 2 LINES.
     58   001524     DISPLAY '              THERE ARE ' COUNT ' MEN REGISTERED IN THIS
     59   001526     'LIBRARY.'.
     60   001540     CLOSE CARD-FILE, LIST-FILE.
     61   001550     STOP RUN.
```

Suggested Solution, Problem C, Printout

LARAINE E. ACAIR	P. O. BOX 644, TECH STATION	257-1332
SANDRA DIANE ACAIR	P. O. BOX 126, TECH STATION	257-2891
JUDITH ANN ADAMS	GENERAL DELIVERY, TECH STA.	257-2020
DIANE ATKINS	P. O. BOX 469, TECH STATION	257-1182
DONNA LUNC AFEMAN	703 WEST MISSISSIPPI	255-1140
PATRICIA LYNN HENRY	P. O. BOX 697, TECH STATION	257-0420
TOMMIE DAVIS HERREN	DUBACH, LOUISIANA	777-4621
FAYE BLAIN MASSICOT	P. O. BOX 1127, TECH STATION	257-4418
ELIZABETH A. B. PEEK	BOX 56, CHOUDRANT, LOUISIANA	242-1706
EUNICE ELAINE PELTON	P. O. BOX 4167, TECH STATION	257-0862

THERE ARE 10 PEN REGISTERED IN THIS LIBRARY.

Suggested Solution
Problem D

Instructor's Notes:

The purpose of this problem is to show how to design headings for printed output, and how to convert codes to full statements.

New devices used are grouped storage in the WØRKING-STØRAGE SECTION, and the ... FRØM... option in a WRITE ... statement.

Class Preparation:

No new preparation required -- use same address cards.

Parameters:

Input:

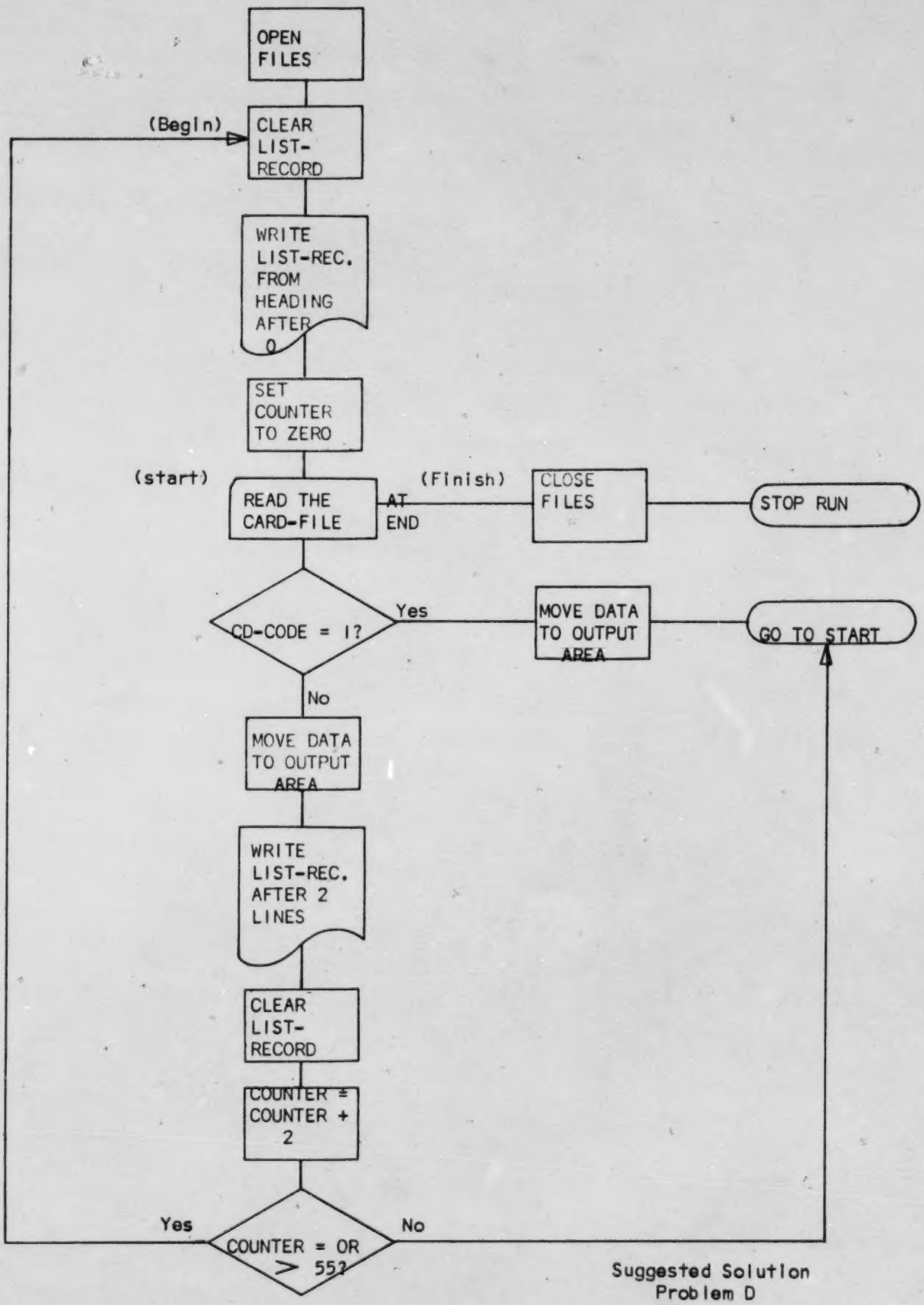
Same as for Problem A, version 1, page 18.

Output:

Design your own.

Instructions:

See Assignment Problem D, page 18.



Suggested Solution
Problem D
Flowchart

Suggested Solution, Problem D, Program

```
LINE NO.  SEQ. NO.        SOURCE STATEMENT                                  COBOL CL3-7 09/03/70

    1     001010 IDENTIFICATION DIVISION.
    2     001020 PROGRAM-ID. 'INTLIST'.
    3     001030 AUTHOR. SAD.
    4     001040 REMARKS. SUGGESTED SOLUTION TO UNIT 3, PROBLEM D.
    5     001050 ENVIRONMENT DIVISION.
    6     001060 CONFIGURATION SECTION.
    7     001070 SOURCE-COMPUTER. IBM-360.
    8     001080 OBJECT-COMPUTER. IBM-360.
    9     001090 INPUT-OUTPUT SECTION.
   10     001095 FILE-CONTROL.
   11     001100     SELECT CARD-FILE ASSIGN TO 'SYS012' UNIT-RECORD 2540R.
   12     001110     SELECT LIST-FILE ASSIGN TO 'SYS014' UNIT-RECORD 1403.
   13     001120 DATA DIVISION.
   14     001130 FILE SECTION.
   15     001140 FD  CARD-FILE RECORDING MODE IS F, RECORD CONTAINS 80 CHARACTERS,
   16     001150     LABEL RECORDS ARE OMITTED, DATA RECORD IS CARD-RECORD.
   17     001160 01  CARD-RECORD.
   18     001170     02  SEC-NO          PICTURE 9(6).
   19     001180     02  NAME            PICTURE X(30).
   20     001190     02  HOME-ADD        PICTURE X(30).
   21     001200     02  HOME-TEL        PICTURE X(8).
   22     001210     02  CODES.
   23     001220         03  CLASS       PICTURE X.
   24     001230         03  COLLEGE     PICTURE X.
   25     001240         03  SEX         PICTURE X.
   26     001250         03  BLANK       PICTURE XX.
   27     001260         03  CD-CODE     PICTURE X.
   28     001270 FD  LIST-FILE RECORDING MODE IS F, RECORD CONTAINS 133 CHARACTERS
   29     001280     LABEL RECORDS ARE OMITTED, DATA RECORDS ARE LIST-RECORD.
   30     001290 01  LIST-RECORD.
   31     001300     02  FILLER          PICTURE X(6).
   32     001310     02  S-NO            PICTURE 9(6).
   33     001320     02  FILLER          PICTURE XX.
   34     001330     02  NAMES           PICTURE X(30).
   35     001340     02  FILLER          PICTURE XX.
   36     001350     02  C-ADD           PICTURE X(30).
   37     001370     02  FILLER          PICTURE XX.
   38     001380     02  C-TEL           PICTURE X(8).
   39     001390     02  FILLER          PICTURE XX.
   40     001395     02  CLASS-CD        PICTURE X(10).
   41     001400     02  FILLER          PICTURE XX.
   42     001410     02  COLL-CD         PICTURE X(17).
   43     001420     02  FILLER          PICTURE XX.
   44     001430     02  SEX-CD          PICTURE X(6).
   45     001440 WORKING-STORAGE SECTION.
   46     001450 77  COUNTER             PICTURE 99  VALUE ZERO.
   47     001460 01  HEADING.
   48     001465     02  FILLER          PICTURE X(6)    VALUE SPACE.
   49     001480     02  NO              PICTURE A(6)    VALUE 'NUMBER'.
   50     001490     02  FILLER          PICTURE XXXX    VALUE SPACE.
   51     001500     02  NAM             PICTURE AAAA    VALUE 'NAME'.
   52     001510     02  FILLER          PICTURE X(28)   VALUE SPACE.
   53     001520     02  CAM-ADD         PICTURE A(14)   VALUE 'CAMPUS ADDRESS'.
   54     001530     02  FILLER          PICTURE X(16)   VALUE SPACES.
   55     001540     02  TELE            PICTURE A(9)    VALUE 'TELEPHONE'.
   56     001550     02  FILLER          PICTURE XXX     VALUE SPACES.
   57     001560     02  CLAS            PICTURE A(5)    VALUE 'CLASS'.
   58     001570     02  FILLER          PICTURE X(15)   VALUE SPACES.
   59     001575     02  COLL            PICTURE A(7)    VALUE 'COLLEGE'.
   60     001580     02  FILLER          PICTURE X(11)   VALUE SPACES.
   61     001590     02  SX              PICTURE AAA     VALUE 'SEX'.
   62     001595     02  FILLER          PICTURE XX      VALUE SPACES.
   63     001600 PROCEDURE DIVISION.
   64     001610     OPEN INPUT CARD-FILE, OUTPUT LIST-FILE.
   65     001620 BEGIN. MOVE SPACES TO LIST-RECORD.
   66     001630     WRITE LIST-RECORD FROM HEADING AFTER 0 LINES.
   67     001635     COMPUTE COUNTER = 2.
   68     001637     MOVE SPACES TO LIST-RECORD.
   69     001640 START. READ CARD-FILE AT END GO TO FINISH.
   70     001650     IF CD-CODE = 1 MOVE SEC-NO TO S-NO, MOVE NAME TO NAMES,
   71     001660     PERFORM CONVERSIONS, GO TO START, ELSE MOVE HOME-ADD TO
   72     001670     C-ADD, MOVE HOME-TEL TO C-TEL, WRITE LIST-RECORD AFTER 2
   73     001680     LINES, MOVE SPACES TO LIST-RECORD, COMPUTE COUNTER = COUNTER
   74     001685     + 2.
   75     001690     IF COUNTER EQUAL TO 55 OR COUNTER GREATER THAN 55, GO TO
   76     001700     BEGIN, ELSE GO TO START.
   77     002010 CONVERSIONS. IF CLASS = 1 MOVE 'FRESHMAN' TO CLASS-CD.
   78     002020     IF CLASS = 2 MOVE 'SOPHOMORE' TO CLASS-CD.
   79     002030     IF CLASS = 3 MOVE 'JUNIOR' TO CLASS-CD.
   80     002040     IF CLASS = 4 MOVE 'SENIOR' TO CLASS-CD.
   81     002050     IF CLASS = 5 MOVE 'GRADUATING STUDENT' TO CLASS-CD.
   82     002060     IF CLASS = 6 MOVE 'MASTERS GRADUATE' TO CLASS-CD.
   83     002080     IF CLASS = 7 MOVE 'DOCTORAL GRADUATE' TO CLASS-CD.
   84     002090     IF CLASS = 8 MOVE 'SPECIAL STUDENT' TO CLASS-CD.
   85     002100     IF CLASS = 9 MOVE 'FACULTY' TO CLASS-CD.
   86     002110     IF CLASS = 0 MOVE 'STAFF' TO CLASS-CD.
   87     002115     IF CLASS = SPACE MOVE 'OTHER' TO CLASS-CD.
   88     002120     IF COLLEGE = 1 MOVE 'AGRICULTURE' TO COLL-CD.
   89     002130     IF COLLEGE = 2 MOVE 'ARTS AND SCIENCES' TO COLL-CD.
   90     002140     IF COLLEGE = 3 MOVE 'BUSINESS' TO COLL-CD.
   91     002145     IF COLLEGE = 4 MOVE 'EDUCATION' TO COLL-CD.
   92     002150     IF COLLEGE = 5 MOVE 'ENGINEERING' TO COLL-CD.
   93     002160     IF COLLEGE = 6 MOVE 'HOME ECONOMICS' TO COLL-CD.
   94     002170     IF SEX = 'M' MOVE 'MALE' TO SEX-CD.
   95     002180     IF SEX = 'F' MOVE 'FEMALE' TO SEX-CD.
   96     002190 FINISH. CLOSE CARD-FILE, LIST-FILE.
   97     002200     STOP RUN.
```

Suggested Solution, Problem D, Printout

NUMBER	NAME	CAMPUS ADDRESS	TELEPHONE	CLASS	COLLEGE	SEX
CC0112	HUGH T. ABERCROMBIE	P. O. BOX 1776, TECH STATION	257-7163	JUNIOR	AGRICULTURE	MALE
CC0197	LARAINE E. ADAIR	P. O. BOX 644, TECH STATION	257-1332	SOPHOMORE	ARTS AND SCIENCES	FEMALE
CC0159	SANDRA DIANE ADAIR	P. O. BOX 126, TECH STATION	257-2891	FRESHMAN	BUSINESS	FEMALE
CC024C	GERALD LOYD ADAMS	GENERAL DELIVERY, TECH STA.	257-7113	SENIOR	EDUCATION	MALE
CC0255	JUDITH ANN ADAMS	GENERAL DELIVERY, TECH STA.	257-2C20	GRADUATING STUDENT	ENGINEERING	FEMALE
CC05CC	DIANE ATKINS	P. O. BOX 469, TECH STATION	257-1182	MASTERS GRADUATE	HOME ECONOMICS	FEMALE
CC0665	DONNA LYNN AFEMAN	703 WEST MISSISSIPPI	255-1148	GRADUATING STUDENT	ENGINEERING	FEMALE
CC0625	HASSAN AHMADI	111 WEST ARIZONA STREET	255-5555	SPECIAL STUDENT	EDUCATION	MALE
CC07CC	HOWARD EARL AIKEN, JR.	P. O. BOX 647, TECH STATION	257-1128	STAFF	BUSINESS	MALE
CC0729	LEO EDWIN ALBANO, JR.	501 WEST CALIFORNIA	255-1228	OTHER	ARTS AND SCIENCES	MALE
CC08CC	EDDIE E. ALBRITTON	302 WEST CALIFORNIA	255-9281	FRESHMAN	BUSINESS	MALE
04C065	PATRICIA LYNN HENRY	P. O. BOX 697, TECH STATION	257-0428	SOPHOMORE	EDUCATION	FEMALE
C40135	TOMMIE DAVIS HERREN	DUBACH, LOUISIANA	777-4621	JUNIOR	ENGINEERING	FEMALE
04027C	TERRY FORD HESSICK	P. O. BOX 4729, TECH STATION	257-3287	SENIOR	HOME ECONOMICS	MALE
040287	JAMES HETHERWICK	NO. 20 WHITE HOUSE APTS.	25,-463C	GRADUATING STUDENT	ENGINEERING	MALE
059102	FAYE BLAIN MASSICOT	P. O. BOX 1127, TECH STATION	257-4418	MASTERS GRADUATE	EDUCATION	FEMALE
059265	WAYNE N. MATHEWS	P. O. BOX 4181, TECH STATION	255-4321	DOCTORAL GRADUATE	BUSINESS	MALE
059925	G. L. MEARS	P. O. BOX 4112, TECH STATION	255-8107	SPECIAL STUDENT	ARTS AND SCIENCES	MALE
059989	ELIZABETH A. R. MEEK	BOX 56, CHOLORANT, LOUISIANA	242-1706	FACULTY	AGRICULTURE	FEMALE
0601CC	EUNICE ELAINE MELTON	P. O. BOX 4167, TECH STATION	257-0862	STAFF	ARTS AND SCIENCES	FEMALE

UNIT IV

CIRCULATION APPLICATIONS

Instructor's Notes:

The purpose of this unit is to apply programming principles already developed to representative problems in the area of circulation.

The method suggested is as follows: Class periods should be used to explain new concepts encountered by the students in planning their programs. Primary emphasis should be upon individual problems on an individual basis. If the entire class has not progressed enough at this point to attempt individual solutions to the problems, slower students could be separated into small groups which could work on the problems together. Only the instructor's judgement can dictate which would be the better method here. Before the end of this unit, however, the student should be solving the problems on an individual basis.

Helpful resources include the "Suggested Solutions" presented as the body of this unit and the following:

Materials and supplies:

- COBOL coding sheet transparency with blank overlays
- COBOL coding sheets
- Chalk
- Grease pencil
- Flowcharting template

Equipment:

- Overhead projector
- Opaque projector
- Chalk board

References:

- ... COBOL Language Specifications
- ... COBOL Programmer's Guide
- ... "A Data Processing Glossary"

Class Preparation:

Duplicate the assignment problem parameters and instructions for distribution to the class.

Problem A, Charging a Book

Instructor's Notes:

The purpose of this problem is to build a data file containing books charged to students. It will give the student experience for the first time with tape files. The student will have to request a DEBE from the computer center when his program is run with data. Two more control cards will be required:

```
// LBLTYP TAPE
// TLBL SYS015,'CIRCFILE',,DYSØN2
```

Punching begins in column 1 and punctuation is as shown. The //LBLTYP TAPE card must appear before the // EXEC LNKEDT card. The other is added immediately after the // EXEC LNKEDT card previously introduced.

Another new option not required except for efficient use of tape space and running time is the BLØCK CØNTAINS integer RECØRDS . . . option. Optimum size of the block on the computer you will use is presently 3,625 bytes - it may be less, but not more. With fixed length records, as this problem has, the option will appear as follows:

... BLØCK CØNTAINS 60 RECØRDS ... the 60 is derived from a division of 3,625 by the length of the record (60) giving the maximum number of whole records which can be contained within 3,625 bytes. The logical but not required place for this option is following the ... RECØRD CØNTAINS ... clause in the FD entry of the File Section.

The computing center requires that special instructions be given for the operator when tapes or disks are used. The instructions you will need for this problem are as follows:

```
MØUNT UT-002 on X'180'
Please DEBE UT-002 after the program
  runs.  Thanks
```

Special instruction cards are "goldenrod" colored and are available at the left of the dispatch window of the computing center.

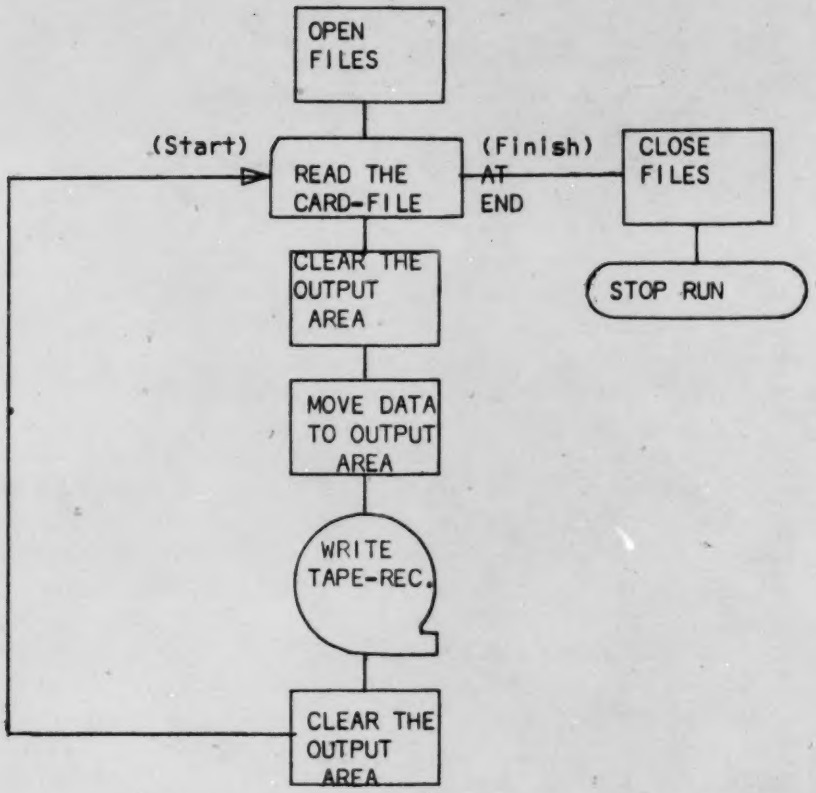
Class preparation will include the preparation of about 200 transaction cards to be used for data in building the tape file. One data deck for each class member will be needed, and they should be sorted in ascending accession number order. They need not be interpreted, so could be gang punched by computer center personnel. Give each class member a "special instructions" card.

Parameters:

1. Data cards are in ascending accession number order.
2. Format for the transaction card (data card) is as follows:
   a. cols. 1 - 11 call number
      cols. 1 - 6 Dewey classification number (no decimal required)
      cols. 7 - 11 author number
   b. cols. 12 - 28 author's name, last name first, initials
   c. cols. 29 - 34 accession number
   d. cols. 35 - 40 blank
   e. cols. 41 - 46 date due
   f. cols. 47 - 49 Julian date
   g. cols. 50 - 73 blank
   h. cols. 74 - 79 student identification number
   i. col. 80 C
3. A one-card IBM 357 circulation system is used.
4. A two-week charge is assumed.

Instructions:

1. From the above descriptions, write a program which will build a circulation file on magnetic tape with the following format:
   a. call number 11 characters
   b. author 17 characters
   c. accession number 6 characters
   d. date due 6 characters
   e. date returned 6 characters
   f. fine 5 characters
   g. student ID number 6 characters
2. Request a tape dump (DEBE) in order to prove the extent of your success.



Suggested Solution
Problem A
Flowchart

Suggested Solution, Problem A, Program

```
LINE NO.  SEQ. NO.        SOURCE STATEMENT                              COBOL CL3-7 09/23/70

    1     001040 IDENTIFICATION DIVISION.
    2     001050 PROGRAM-ID. 'CIRCFILE'.
    3     001060 AUTHOR. SAD.
    4     001070 REMARKS. SUGGESTED SOLUTION TO UNIT IV, PROBLEM A.
    5     001080 ENVIRONMENT DIVISION.
    6     001090 CONFIGURATION SECTION.
    7     001100 SOURCE-COMPUTER. IBM-360.
    8     001110 OBJECT-COMPUTER. IBM-360.
    9     001120 INPUT-OUTPUT SECTION.
   10     001130 FILE-CONTROL.
   11     001140     SELECT TRANS-CARD ASSIGN TO 'SYS012' UNIT-RECORD 2540R.
   12     001150       SELECT TAPE-FILE ASSIGN TO 'SYS015' UTILITY 2400 UNIT.
   13     001160 DATA DIVISION.
   14     001170 FILE SECTION.
   15     001180 FD  TRANS-CARD RECORDING MODE IS F, RECORD CONTAINS 80 CHARACTERS
   16     001190     LABEL RECORDS ARE OMITTED, DATA RECORD IS TRANS-RECORD.
   17     001200 01  TRANS-RECORD.
   18     001210     02  CALL-NO.
   19     001220         03  DEWEY-NO     PICTURE X(6).
   20     001230         03  AUTH-NO      PICTURE X(5).
   21     001240     02  NAME             PICTURE X(17).
   22     002010     02  ACCESS-NO        PICTURE 9(6).
   23     002020     02  FILLER           PICTURE X(6).
   24     002030     02  DUE-DATE.
   25     002032         03  FILLER       PICTURE 9(6).
   26     002035     02  JUL-DATE         PICTURE 999.
   27     002040     02  FILLER           PICTURE X(24).
   28     002050     02  STU-ID           PICTURE 9(6).
   29     002060     02  CHRG-CD          PICTURE A.
   30     002070 FD  TAPE-FILE RECORDING MODE IS F, RECORD CONTAINS 60 CHARACTERS,
   31     002075     BLOCK CONTAINS 60 RECORDS,
   32     002080     LABEL RECORDS ARE STANDARD, DATA RECORD IS TAPE-RECORD.
   33     002090 01  TAPE-RECORD.
   34     002100     02  CALL-NUM.
   35     002110         03  CLASS-NO     PICTURE X(6).
   36     002120         03  AUTH-NUM     PICTURE X(5).
   37     002130     02  AUTHOR           PICTURE X(17).
   38     002140     02 ACC-NUM           PICTURE 9(6).
   39     002150     02  DATE.
   40     002160         03  DUE.
   41     002162             04  MONTH   PICTURE 99.
   42     002164             04  DAY     PICTURE 99.
   43     002166             04  YEAR    PICTURE 99.
   44     002168             04  J-D     PICTURE 999.
   45     002170         03  RETURNED     PICTURE 9(6).
   46     002180     02  FINE             PICTURE 999V99.
   47     002190     02  ID-NUM           PICTURE 9(6).
   48     002200 PROCEDURE DIVISION.
   49     002210     OPEN INPUT TRANS-CARD, OUTPUT TAPE-FILE.
   50     002220 START. READ TRANS-CARD AT END GO TO FINISH.
   51     002230     MOVE SPACES TO TAPE-RECORD.
   52     002240     MOVE CALL-NO TO CALL-NUM.
   53     003010     MOVE NAME TO AUTHOR.
   54     003020     MOVE ACCESS-NO TO ACC-NUM.
   55     003030     MOVE DUE-DATE TO DUE.
   56     003035     MOVE JUL-DATE TO J-D.
   57     003040     MOVE STU-ID TO ID-NUM.
   58     003050     WRITE TAPE-RECORD.
   59     003060     MOVE SPACES TO TAPE-RECORD.
   60     003070     GO TO START.
   61     003080 FINISH. CLOSE TRANS-CARD, TAPE-FILE.
   62     003090     STOP RUN.
```

```
843   G586RGONCOURT, E.L.A.H00589009217026 4                0364509099  H36C MARVIN, FRANCIS  013293081770  REC      1, LENGTH  3600
229              009660910   B68P BOWMAN, ISAIAH   015083081770229              009875910   B68G BOWMAN, I
SAIAH   015849081770229              009650792   T279WTERRY, D. E.    017800081070222              040287
792   P42W PERRY, C. A.      021498081070222              06010090982 T37L THOMPSON, DOROTHY022070081770
229              009350808850SUP7SSUTTON, ROBERTA  023655100570278              04954580886 B7835BROCKWAY,
 WALLACE028927100570278              049625910   843F28ENGSTON, N. A.  0332°1081770229              009525
910   B68G BOWMAN, ISAIAH   035374081770229              00972580886 G289FGENTRY, C. G.     040010100570
278              04967580887 AL53MALLEN, E. F.     040018100570278              04972580887 AL53MALLEN, E.
 E.    040523100570278              049750808820AM35SAMER. LIB. ASN.  041819081070222              000157
90982 OV2D OVERSEAS PRESS C.041882082470236              01452580887 B782LBROCK, H. I.      043868100570
278              05002590982 OV2N OVERSEAS PRESS C.046691082470236              01487580886 SCH88SCHUSTER,
 M. L.  049652100570278              04970090982 SCH16SCHAPIRO, J. S.  050389081770229              008750
792   P317WPEARSON, HESKETH 051442081070222              00080090982 N479 NEWSWEEK              052723082470
236              01432590982 SA37WSALTER, JAMES ARTO54026081770229              008643910   B319WBATES, MA
RSTON   054552081770229              00950790982 OV2E OVERSEAS PRESS C.056114082470236              014575
80883 AS69RASQUITH, C. M. E.057537100570278              04843390982 P759              059686081770
229              008375792025AS39YASHWORTH, B.     061954081070222              040065903   0499GDE VRIES,
 LOUIS   061990802470236              01375090982 ST48CSTEVENSON, ADLAI 062170081770229              009050
80883 B268CBARON, J. L.      066577100570278              04892580885 R431MRIDDLE, GEORGE    068073100570
278              04962589173 G677TGORKII, MAKSIM   072078082470236              01354380883 B279BBARROWS,
MARJORIE075330100570278              04908080883 AR38SARGOSY              075421100570278              048400
792   SE4M SELDEN, SAMUEL   082754081070222              05926590982 SN61JSNOW, EDGAR       084436081770
229              00901290982 OB5W OBLENSKY, SERGE  085182082470236              014461903   0499GDE VRIES,
 LOUIS   091186082470236              01385090982>E77NSETON-WATSON, H.  095304081770229              008900
80887 C335OCERF, R. A.      076629100570278              05030079202?D294CDAVIS, J. H.      097162081070
222              04027090982 N479FNEWSWEEK          100664082470236              01435080883 B289DBARZUN, J
ACQUES   101232100570278              04924090982 N479FNEWSWEEK          102453082470236              014450
80885 P941SPROCHNOW, H. V.  104766100570278              04941590982 SL28WSLESSOR, JOHN C. 105942081770
229              00898290982 PAP  DEAN, VERA M.    108212081770229              00848390982 PAP  DEAN, VER
A M.    108213081770229              00857180885 P941CPROCHNOW, H. V.  108312100570278              049262
792   SO88CSOUTHERN, RICHARD108912081070222              05918280882OR454?BERGQUIST, G. W. 111251081070
222              000112792   R187WRATHBONE, BASIL  111439081070222              059925910   843F3BENGSTON,
 N. A.  111942081770229              00958554700SF778 BURNS, ROBERT     112248092870271              045070
547005F778 BURNS, ROBERT    112274092870271              04517580883 B26RABARD, GENE        116797100570
278              04887590982 STR15STRACHEY, JOHN   117170081770229              00907554700SF778 BURNS, RO
BERT    119441092870271              04522579202SJ774SJOSEPH, STEPHEN   122510081070222              000700

90982 OV2I OVERSEAS PRESS C.124515082470236              01475054700SF778 BURNS, ROBERT     128505092870  REC      2, LENGTH  3600
271              04525080883 B575FBLAIR, T. M. H.  133966100570278              04924579202SK419SKENTON, W
ARREN   135818081070222              00062554700SF778              137973092170264              035950
547005F778                  145926092170264              03602590982 R259AREES, DAVID       149942081770
229              0085R0792023ST86OSTRINDBERG, A    154295081070222              04013590982&N213PNAT'L. BR
CADCAST.155228081770229              00941580887 B626TBLUMENFELD, GERRY156862100570278              049925
792   P673WLEY-PISCATOR, M. 158204081070222              05998979202SG413IGILLETTE, A. S.  158409081070
222              000729547005F778              159139092170264              03605080887 B626CBLUMENFEL
D, GERRY159415100570278              0497750277  F987FFUSSLER, HERMAN  160078083170243              023315
0281  D249RDARLING, R. L.    168167083170243              023586025   D231WDANMARKS BIBLIOTE168173090770
250              02703679633 D265FDAUGHERTY, HUGH  168233081070222              0001590961  R742MROTHE, ED
ITH     168238083170243              023950070   W643EWILCOX, DENNIS L.168277083170243              023800
0285  H939THURLIMANN, BETTIN168317083170243              02365015018 ED95EEDWARDS, ALLEN L.168361083170
243              02435001753 M17A MC GAFFIN, WILL. 168369090770250              02680002782 T229TTEEN AGE
LIB. ASN168389083170243              0233750214  8657LBOSTWICK, A. E.  168496090770250              026900
02075 SM63FSMITH, P. J.     168818090770250              0268750253  N213SN. E. A. OF U. S.168858090770
250              0270850251  M838LMORSE, P. M.     169174090770250              027050128   L874NLOOS, A.
M.      169395083170243              02412311185 SCH33SCHILLER, J. C. F169397083170243              024078
89173 T58CETOLSTOI, L. N.   168479082470236              01365089173 T58KETOLSTOI, L. N.  168480082470
236              013713150   DS1E DEWEY, JOHN      168499083170243              024225150   DS1E DEWEY, JO
HN      168500083170243              0242757941  EU89WEUWE, MACHGIELIS 168562081070222              000240
111   H273EMASEROT, F. S.   168564083170243              024050150   F927OFROMME, ALLAN     168639083170
243              02433503102 T482TTIMBS, JOHN      168731083170243              023743081   W871OWOODWARD,
 CHESTER168735083170243              0239+0909   IN8H INTERNAT. COMM.  168762082470236              013975
150195F895YWOLMAN, B. B.    168789083170243              02440089186 C171 CAPEK, KAREL      168795082470
236              0137199019  AM352AMER. COUNCIL OF 168803082470236              0137259072  SA38HSALVEMINI
, GAETAN168817082470236              01386301573 L532PLEIDY, W. P.     168832090770250              026640
0297  UN3I U. S. A. STANDARD168872083170243              023675909   8534TBIRKENHEAD, F.E.S168872082470
236              0139507933071N4M INGRAM, A. G.    168877081070222              0005007933  SH510SHERBON,
E.      168926081070222              0006051509?3SH15ISHAKOW, DAVID     169122083170243              024407
0271  N481ENEWTON, A. E.    169148083170243              02320079334 SE77YSETS IN ORDER     169149081070
222              000255908   F533PFISHER, H. A. L. 169167082470236              01392390982 C722TCOLTON, J
. C.    169276082470236              014235110   US3P USHENKO, A. P.  169306083170243              024000
547005F778                  173582092170264              036075F     AS23HASCH, SHOLEM      174701092170
264              036100F     ER8GAERSKINE, JOHN    174702092170264              036150F     G1272GAINES, E
. J.    174703092170264              036185F     H189CHAMSUN, KUNT     174705092170264              036200

F     H839CHOWELLS, W. D.   174706092170264              036223F     M187RMCINTYRE, MARJOR.174707092170  REC      3, LENGTH  3600
264              036315F     SM56FSMITH, F. H.     174708092170264              036428F     Y271FYATES, DO
ROTHY   174709092170264              036400F     D934CDURHAM, R. L.    174771092870271              044613
F     ED59SEDMUNDS, MURRELL 174772080370215              291485843   G361FGIDE, A. P. G.    174774092870
271              044600F     G6532GORDON, C. W.    174775080370215              973256F     L621HLIEBER, J
OEL     174776092870271              044490F     OE6W OEMLER, MARIE    174777092870271              044450
89173 P97CAPUSHKIN, A. S.   174778080370215              018947F     S1645SINGH, KHUSHWANT 174779080370
215              119653F     W242GWARNER, C. D.    174780092170264              03643682183 B82PRBROWNING,
 ROBERT 174906080370215              0001128216? B93PWBURNS, ROBERT     174907092870271              045060
65882 D2560DARTNELL CORP.   174908092870271              0450351554  G875BGRIFFITHS, RUTH   174909092870
271              04495081138_W59YMMILLER, E. H.    174911092870271              04490037130N213INAT. INF.
 CENTER 174912092870271              0448503309  N42W NEW YORK TIMES   174913092870271              044828
884   N877PNOYES, ROBERT    174914092870271              04480097391?R67WOD'BRIEN, P. J.    174915092870
271              04487532747 SM53RSMITH, C. J.     174916092870271              04479091?303ST89ISTROUT, C
USHING  174918092870271              044765              174919092870271              044780
34799 W2512                 174920092870271              044710796   SH265SHAW, J. M.       174921080370
215              0001577933  NS82WBCURMAN  ANATOLE 174922080370215              0001595207 C368QCHAPPELL,
 C. G.  174923080370215              0002408209  K287SKELLETT, E. E.   174924080370215              000255
8408  OX2  OXFORD BOOK, 1957174925080370215              000500821   OX2  OXFORD BOOK, 1967174926080370
215              000605610?9 P871WPOWER, D'ARCY    174927080370215              040135824   P875EPOWYS, LL
EWELYN  174928080370215              0402709175  R134LRAINE, J. W.     174929080370215              000625
8088  R871TRUNES, D. D.     174930080370215              04028791469 ST24ISTANISLANSKI, DAN174931080370
215              0591827595  ST31WSTEARNS, F. P.   174932080370215              00070037815SST51ESTICKLER,
 W. H.  174933080370215              059265396   G54WTTAYLOR, G. R. S. 174934080370215              060100
3701967214WTAYLOR, HAROLD   174935080370215              0599893309427437STICTNER, F. W.    174936080370
215              05992578007 UP8S UPTON, G. P.     174937080370215              0007298109  V338EVAN NOSTR
AND, A.D174938080370215              0008006580O1W125PWAGNER, H. M.     174939080370215              040065
7514  W672NWILLIAMS, HIRAM  174940092170264              036463658001AM35RAM. INST. OF I.E.174961091470
257              0322443728?2C498CCITIZENSHIP ED.  174962091470257              03200091336 C548MCLARK, J.
 G. D.  174963091470257              031965769   C582HCLEAVER, JAMES   174964091470257              031900
8104  EL594ELLIS, C. M.     174966091470257              031896701   F193AFALLICO, A. B.    174967091470
257              0318753324975F914DFRIEDMAN, MILTON 174968091470257              0318503008  TI57BTANNENBAU
M, FRANK174969091470257              03174690193 T729CTREVOR-ROPER, H.R174970091470257              031682
320949V972CVUCINICH, W. S.  174971092170264              036733350   W147IWALDO, DWIGHT     174972092170
264              0366358092  W154PWALKLEY, A. B.   174973091470257              03222597373 L515WWHITE, H.
 A.      174974091470257              03215037092 AL19WWEST, A. F.      174975091470257              032125
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Suggested Solution, Problem A, DEBE Printout (continued)

```
32102 W622                    174976092170264
257          0321003091 73W734VWINTER, J. A.
WARD     174979092170264              036481821
37782 R449                    174982090770250
250          025825804   G695LGOSSE, E. W.
RESS     174985090770250              025625248
6159  N2132NRC COM. ON EFF. 174987091470257
257          0328003381 76P825 PORK INDUSTRY
G. W.    174990090770250              026375703
973713R641CROLAND, C. P.      174992091470257
250          0262003389 73S054PSOMERS, H. W.
, ALBERT174995090770250              0259613805
89511 T782CTS'AI, T'ING-KAN 174998090770250
257          0326347594   F825YWESHER, P. R.
AR       175000091470257              032400

                    03660078124 W671SWILLIAMS, C. F. 174977 091470  REC     4, LENGTH  1440
 174978091470257              032050821   Y84P YOUNG, ED
Y84P YOUNG, EDWARD     174980092170264              036550
                    026509282   G613WGOODIER, ALBAN   174983090770
 174984090770250              02572579606 IN8P INT. CONG
M891JMUGGERIDGE, MALCO174986090770250              025475
                    032912942   N844WNOTESTEIN, W.    174988091470
 174989090770250              02647534242 P946SPROTHER,
Q4A  QUICK, JOHN       174991090770250              026225
                    03272537973 SM62DSMITH, M. B.     174993090770
 174994090770250              02602584O9  T345HTHIBAUDET
T687                   174996090770250              025875
                    025850301445T7238TRENT, J. W.     174997091470
 174999091470257              0326257595  B417YWIND, EDG
```

Problem B, Discharging a Book

Instructor's Notes:

The purpose of this problem is to update the circulation file after discharging books returned on time and computing fines for those overdue. A card file representing books returned and two tape files will be necessary. The control card for the circulation file will be the same as for the previous program, but the second tape file will be controlled as follows:

```
// TLBL SYS016, 'NEWFILE',,999999
```

The six 9's designate to the computer operator that a "SCRATCH" or general purpose tape is to be mounted. Were this an actual operation, the programmer would reference a specific tape number, possibly owned by the library, as in the case of UT-002.

Added special instructions for the second tape will be as follows:

```
MØUNT SCRATCH ØN X'181'
Please DEBE SCRATCH after
  the program run.
```

You will not need to DEBE UT-002 as before.

Other new options used in this program are ... PERFØRM..., mathematical computations, ... NEXT SENTENCE..., and some rather specialized logic in the computing of fines.

Class Preparation will involve preparing about 30 discharge data cards, some of which will represent overdue books (about 10). The circulation file from the previous problem (UT-002) will need to be preserved for use in this problem. Both the circulation file and the discharge card file will need to be sorted in ascending accession number order. (See program SORTER in Appendix A)

Parameters:

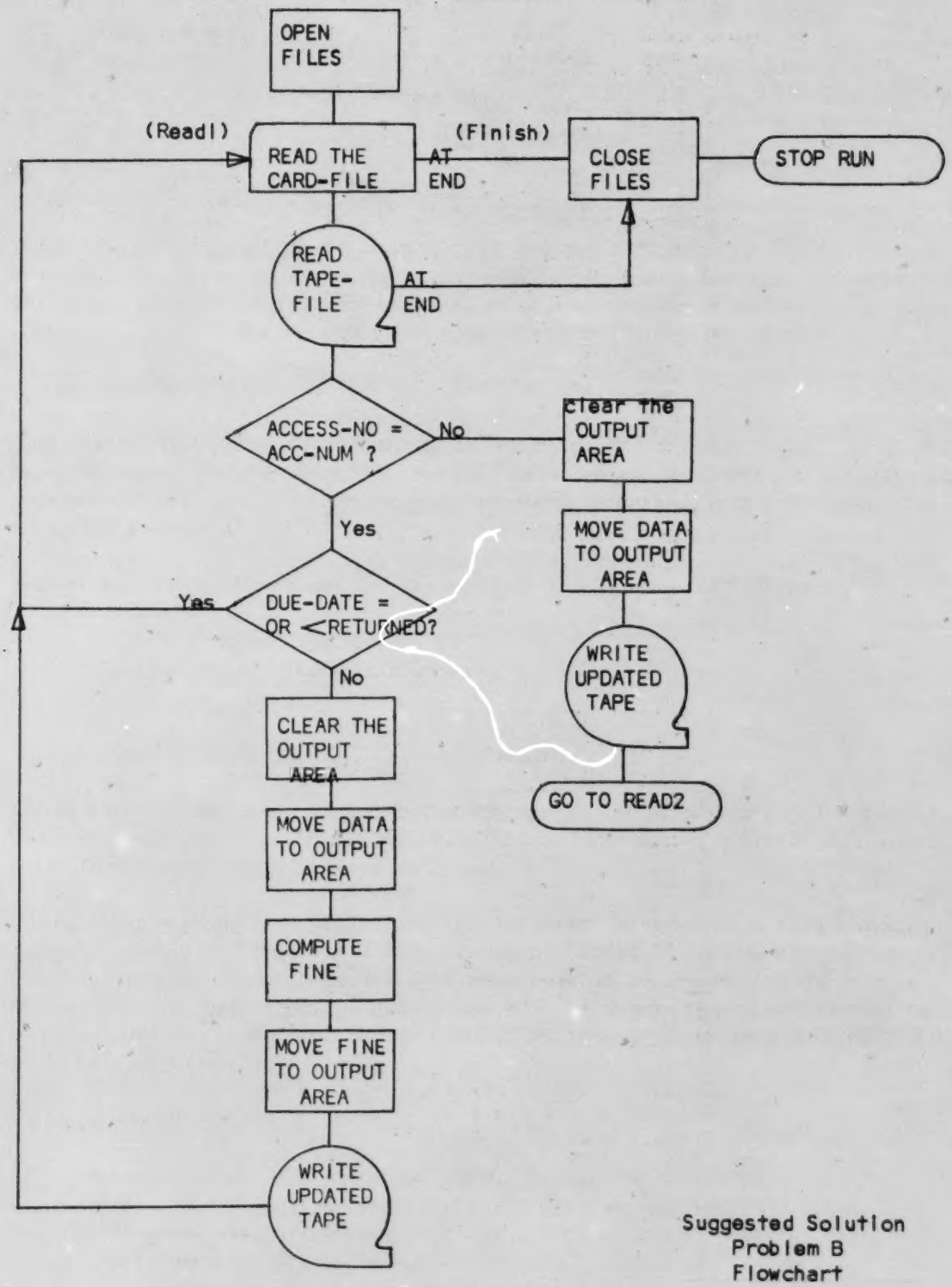
1. Discharge cards are in ascending accession number order.
2. Circulation file is also in ascending accession number order.
3. The transaction card (discharge card) format is as follows:
   a. Call number
      (1) Dewey Class. 6 characters
      (2) Auth. number 5 "

b.	Author's name	17 characters
c.	Accession number	6 characters
d.	Filler	12 characters
e.	Julian date returned	3 characters
f.	Date returned	6 characters
g.	Filler	24 characters
i.	Discharge code	1 character

4. The one card IBM 357 data collection system is used.
5. Overdue fines are $ .05 per day.
6. Hint: the Julian date can be invaluable to computing fines.

Instructions:

Write a program that will update the circulation file created in the previous program by adding information from the discharge card. Request a DEBE on the updated tape to prove the success of your program.



Suggested Solution
Problem B
Flowchart

Suggested Solution, Problem B, Program

```
LINE NO.  SEQ. NO.        SOURCE STATEMENT                                  COBOL CL3-7 11/16/70

    1     001010 IDENTIFICATION DIVISION.
    2     001020 PROGRAM-ID. 'DSCHRGBK'.
    3     001030 AUTHOR. SAD.
    4     001040 REMARKS. SUGGESTED SOLUTION TO UNIT 4, PROBLEM B.
    5     001050 ENVIRONMENT DIVISION.
    6     001060 CONFIGURATION SECTION.
    7     001070 SOURCE-COMPUTER. IBM-360.
    8     001080 OBJECT-COMPUTER. IBM-360.
    9     001085 INPUT-OUTPUT SECTION.
   10     001090 FILE-CONTROL.
   11     001100     SELECT DSCHG-FILE ASSIGN TO 'SYS012' UNIT-RECORD 2540R.
   12     001110     SELECT CIRC-FILE ASSIGN TO 'SYS015' UTILITY 2400 UNIT.
   13     001120     SELECT NEW-FILE ASSIGN TO 'SYS016' UTILITY 2400 UNIT.
   14     001130 DATA DIVISION.
   15     001140 FILE SECTION.
   16     001150 FD  DSCHG-FILE RECORDING MODE IS F, RECORD CONTAINS 80 CHARACTERS
   17     001160     LABEL RECORD IS OMITTED, DATA RECORD IS DSCHG-RECORD.
   18     001170 01  DSCHG-RECORD.
   19     002010     02  CALL-NO.
   20     002020         03  CLASS-NO          PICTURE X(6).
   21     002030         03  AUTH-NO           PICTURE X(5).
   22     002040     02  AUTHOR                PICTURE X(17).
   23     002050     02  ACC-NO                PICTURE 9(6).
   24     002060     02  FILLER                PICTURE X(12).
   25     002065     02  J-R                   PICTURE 999.
   26     002070     02  DATE-RET.
   27     002072         03  MONTH             PICTURE 99.
   28     002074         03  DAY               PICTURE 99.
   29     002075         03  YEAR              PICTURE 99.
   30     002080     02  FILLER                PICTURE X(24).
   31     002090     02  CODE                  PICTURE A.
   32     002100 FD  CIRC-FILE RECORDING MODE IS F, RECORD CONTAINS 60 CHARACTERS,
   33     002110     BLOCK CONTAINS 60 RECORDS, LABEL RECORDS ARE STANDARD, DATA
   34     002120     RECORD IS CIRC-RECORD.
   35     002130 01  CIRC-RECORD.
   36     002140     02  CALL-NUM.
   37     002150         03  CLASS-NUM         PICTURE X(6).
   38     002160         03  AUTH-NUM          PICTURE X(5).
   39     002170     02  AUTH                  PICTURE X(17).
   40     002180     02  ACC-NUM               PICTURE 9(6).
   41     002190     02  DATE.
   42     002200         03  DUE.
   43     002202             04  MO           PICTURE 99.
   44     002204             04  DY           PICTURE 99.
   45     002206             04  YR           PICTURE 99.
   46     002208             04  J-D          PICTURE 999.
   47     003010         03  RETURNED.
   48     003015             04  FILLER       PICTURE 9(6).
   49     003020     02  FINE                  PICTURE 999V99.
   50     003030     02  ID-NUM                PICTURE 9(6).
   51     003040 FD  NEW-FILE RECORDING MODE IS F, RECORD CONTAINS 60 CHARACTERS,
   52     003050     BLOCK CONTAINS 60 RECORDS, LABEL RECORDS ARE STANDARD, DATA
   53     003060     RECORD IS NEW-RECORD.
   54     003070 01  NEW-RECORD.
   55     003080     02  CALL-NUMB.
   56     003090         03  CLASS-NUMB        PICTURE X(6).
   57     003100         03  AUTH-NUMB         PICTURE X(5).
   58     003110     02  AUTH-NAME             PICTURE X(17).
   59     003120     02  ACC-NUMB              PICTURE 9(6).
   60     003130     02  DATES.
   61     003140         03  DUES.
   62     003142             04  N-MO         PICTURE 99.
   63     003144             04  N-DY         PICTURE 99.
   64     003146             04  N-YR         PICTURE 99.
   65     003148             04  N-J-D        PICTURE 999.
   66     003150         03  RETURNS.
   67     003155             04  FILLER       PICTURE 9(6).
   68     003160     02  FINES                 PICTURE 999V99.
   69     003170     02  ID-NUMB               PICTURE 9(6).
   70     003180 WORKING-STORAGE SECTION.
   71     003190 77  AMOUNT                    PICTURE 999V99      VALUE ZERO.
   72     003200 77  RESULT                    PICTURE S999        VALUE ZERO.
   73     003215 77  JULIAN                    PICTURE 999         VALUE 365.
   74     004010 PROCEDURE DIVISION.
   75     004020     OPEN INPUT DSCHG-FILE, INPUT CIRC-FILE, OUTPUT NEW-FILE.
   76     004030 READ1. READ DSCHG-FILE AT END GO TO READ2.
   77     004040 READ2. READ CIRC-FILE AT END GO TO FINISH.
   78     004045     MOVE 0.00 TO FINE.
   79     004050     IF ACC-NO NOT EQUAL TO ACC-NUM MOVE SPACES TO NEW-RECORD.
   80     004060         MOVE CIRC-RECORD TO NEW-RECORD,
   81     004070         WRITE NEW-RECORD,
   82     004080         GO TO READ2.
   83     004090     IF YEAR = YR AND J-D = J-R OR YEAR = YR AND J-D > J-R THEN
   84     004092         GO TO READ1.
   85     004094     IF YEAR IS NOT EQUAL TO YR AND J-D < J-R THEN GO TO READ1,
   86     004096       ELSE GO TO OVERDUE.
   87     004100 OVERDUE. MOVE SPACES TO NEW-RECORD.
   88     004110     MOVE CIRC-RECORD TO NEW-RECORD.
   89     004120     MOVE DATE-RET TO RETURNS.
   90     004130     PERFORM COMPUTATION.
   91     004140 NEXT. MOVE AMOUNT TO FINES.
   92     004150     WRITE NEW-RECORD.
   93     004160     GO TO READ1.
   94     004170 COMPUTATION. COMPUTE RESULT = J-D - J-R.
   95     004180     IF YEAR = YR AND RESULT NEGATIVE COMPUTE AMOUNT = (J-R - J-D)
   96     004185     * .05,  GO TO NEXT.
   97     004190     IF YEAR NOT EQUAL TO YR AND RESULT POSITIVE COMPUTE AMOUNT =
   98     004195     ((JULIAN + J-R) - J-D) * .05, ELSE DISPLAY '     YEAR: ' YEAR
   99     004196     ', YR: ' YR ', ACCESSION NUMBER CHRG: ' ACC-NO ', DSCHRG: '
  100     004197     ACC-NUM.
  101     005010 FINISH. CLOSE CIRC-FILE, DSCHG-FILE, NEW-FILE.
  102     005020     STOP RUN.
```

Suggested Solution, Problem B, DEBE Printout

```
843   G586RGONCOLNT, E.L.A.HC0599C092170264          03645090999 M36C MARVIN, FRANCIS C13293081770  REC    1, LENGTH  3600
2291CC670250CCC09460910   B68P BCHMAN, ISAIAH   015083081770229          009875910   B68G BOHMAN, I
SAIAH   015R490R1770229          009650792   1279WTERRY, C. E.      0178QCC81070222          040287
90982 T37L THOMPSON, DORO1HYC2207C0R1770229          00935080886 R783SBROCKWAY, WALLACE028927100570
278          049625910   843F2RENGSTEN, N. A.   033291081770229          009525910   B68G BOHMAN, I
SAIAH   035374081770229          C0972580RR6 G289FGENTRY, C. G.   040010100570278          049675
80887 ALS3MALLEN, E. F.      04C01R1005702781007700100004972580887 ALS3MALLEN, E. F.   C40523100570
278          0497508088ZCAM35SAMER, LIB. ASN.   041819081070222092870245OC00015790982 OV2D OVERSEAS
PRESS C.C4188208247023G          C1452580487 R782LBROCK, P. I.      043868100570278          05C025
90982 OV2N OVERSEAS PRESS C.046691082470236          0148758QRAA SCH88SCHUSTER, M. L.   049652100570
278          0497C090992 SCH16SCHAPIRO, J. S.   050389081770229          00R750792   P317WPEARSON,
HESKETH 051442C81C70222          C0080090982 N479 NEWSWEEK          052723082470236          014325
90982 SA37WSALTER, JAMES AR10540260817702Z9          008643910   R319WBATES, MARSTON   C54552081770
2290818705005CCC0950790982 OV2E OVERSEAS PRESS C.056114082470236          C1457580883 AS69BASCUITH,
C. M. C.0575371CC57C27R          04R43390982 P759          0596R60R1770229          008375
792C25AS39NASHWORTH, B.      C619540810702Z2          040065903   D499GDE VRIES, LOUIS   061998082470
236          0137500992 ST48CSTEVENSON, ADLAI 062170081770229          00905080883 B268CBARON, J.
L.      0665771005C7278          04R92580885 R431MRICCLE, GEORGE   0680731005702781018F7C065CC049425
80883 R279RBARROWS, MARJORIE C753301C0570278          049080792   SE4M SELDEN, SAMUEL   C82754081C70
222          059265990982 SNAIJSACK, EDGAR          0844360817702Z9          00901290982 OB5W OBLENSKY,
SERGE   0R518208247C236          C14463903   D499GDE VRIES, LOUIS   0911860824702Z6          013850
90982D2C77NSETON-WATSON, H.   0953040817702Z9          00890C080887 C3350CERF, B. A.      C9662910057C
278          05C30C7920220294CDAVIS, J. H.      0971620810702Z2          04027090982 N479FNEWSWEEK
          10C6640824702736          01450808883 8289CBARZUN, JACQUES   1012321005702Z8          049240
90982 N479FNEWSWEEK          1024510824702Z6          01445080885 P941SPROCHNOW, H. V.   1047861005Z0
278          C4941590982 SL28WSLESSOR, JOHN C. 1059420817702Z9          00898290982 PAP  DEAN, VER
A M.      10P212C817702Z9          00848390982 PAP  DEAN, VERA M.      1082130817702Z9          008571
80885 P941CPROCHNOW, H. V.   1083121005702Z8          049262792   SO88CSOUTHERN, RICHARD1CR912081070
222          C5918280882CH4541BERGQUIST, G. W. 1112510810702Z2          000112792   R187WRATHBONE,
BASIL   1114390810702Z2          059975910   843F3RENGSTEN, N. A.   1119420817702Z9          009585
547CC5F778 BURNS, ROBERT   11224809287027I          04507054700SF778 BURNS, ROBERT   112274092870
271          0451758088B3 R269ABARC, GENE          1167971005702Z8          04887590982 ST81SSTRACHEY,
JOHN   1117170817702Z9          C09075547005F778 BURNS, ROBERT   1194410928702Z1          045225
792025J774SJOSEPH, STEPHEN   12751C0810702Z2          00070090987 OV2I OVERSEAS PRESS C.124515082470
236          01475C5470C5F778 BURNS, ROBERT   1285050928702Z1          04525080883 B575FBLAIR, T.
M. W.   1395861005C7278          04924579202SK419SKENTON, WARREN   1358IRC810702Z2          000625

547CC5F778          1459260921702Z6          03602579202JST860STRINDBERG, A   1542950810702  REC    2, LENGTH  3600
222          04013580887 B626TBLUMENFELD, GERRY1568621005702Z8          049925792   P673WLEY-PISCA
TOR, M. 1582C40R1C70222          05598954700SF778          1591390921702Z6          036050
80887 B626CBLUMENFELD, GERRY1594151005702Z8          0497750277 F987FFUSSLER, HERMAN   168C78083170
243          0233150281 D2498DARLING, R. L.   1681670831702Z3          0235860Z5   D231WDANMARKS
PIRLIOTE16P173090770250          02703679633 D265FDAUGHERTY, HUGH   1682330R1070222          000159
0561 R742MROTHE, EDITH          1682380831702Z3          0239500Z0   W643EWILCOX, DENNIS L.1682770831Z0
243          0238CCC285 H939IHLRLIMANN, BETTIN1683170831702Z3          02365015018 ED95EEDWARDS,
ALLEN L.16P361C83170243          02435001753 M17A MC GAFFIN, WILL. 1683690C770250          026800
C214 R657LBOSTWICK, A. E.   168496090770250          02690002075 SM63FSMITH, P. J.   168818090770
250          C26875C253 N211SN. E. A. CF U. S.1688580090770250          0270850251   MB38LMORSE, P.
M.      1691740907702Z0          027050128   L874NLCCS, A. W.      1693950831702Z3          024173
11185 SCH33SCHILLER, J. C. F1693970831702Z3          02407889173 T58CETOLSTOI, L. N.   168479082470
236          01365089173 T58KETCLSTCI, L. N.   16P480082470236          C13713150   D51E DEWEY, JO
HN          16P4590831702Z3          0242251501   C51E DEWEY, JOHN          1685C0083170243          024275
7941 EUR5KEUWE, MACHGIELIS 1685620810702Z2          000240111   H273EHASEROT, F. S.   168564083170
243          02405C15C   F927CFRCMPF, ALLAN   1686390831702Z3          02433503102 T482TTIMBS, JO
HN          16P7310831702Z3090C370015C0023743081   W871CWOODWARD, CHESTER16873508317C243          023940
SC9   INBH INTERNAT. COMM.   1687620824702Z6          01397515019SF895YWOLMAN, B. B.   168789083170
243          0244C089186 C171 CAPEK, KAREL          1687958024702Z6          01371599072   SA38HSALVEMINI
, GAETAN16P8170R24702360921701I4CCC01386301573 L532PLEIDY, W. P.      1688320907702Z0          026640
SC9   R534TBIRKENHEAD, F.E.S1688720824702Z6          01395079330714N4M INGRAM, A. G.   168877081C70
2220817703035CCCCC5C07933   SH51CSHERROCK, E.      1689260810702Z2          0006051509735H151SHAKOW, D
AVIC   169122C8317C243          0244070271 N481ENEWTON, A. F.      1691480831702Z3          023200
79334 SE77YSETS IN ORDER          16914908107022Z          000255908   F533PFISHER, H. A. L. 169167082470
236          013923110   L53P LSHENKO, A. P.   1693060831702Z3          0240005470O5F778
          1735820921702Z6          036075F   AS23MASCH, SHOLEM          174701092170264          036100
F      ER8GAERSKINE, JOHN          174702092170264          0161505F   G1272GAINES, E. J.   174703092170
264          C36185F   H189CHAMSUN, KUNT          1747050921702Z6          036200F   H839CHOWELLS,
W. D.   174706092170264          036223F   M187RMCINTYRE, MAJOR.1747070921702Z6          036315
F      SM56FSMITH, F. H.   1747080921702Z6          036428F   Y271FYATES, DOROTHY   174709021Z0
264          0364CCF   D934CDURHAM, R. L.   174771092870271          044613F   ED59SEDMUNDS,
MURRELL 1747720823702Z5          291485843   G361FGIDE, A. P. G.   1747740928702Z1          044600
F      G6532GORDON, C. W.   1747750803702Z5          973256F   L621HLIEBER, JOEL   174776092870
271          044490F   GE6W OEMLER, MARIE   1747770928702Z1          04445089173 P97CAPUSHKIN,
A. S.   1747780803702Z5          018947F   S16455INGH, KHUSHWANT 1747790803702Z5          119653

F      W242GWARNER, C. D.   1747800921702Z6          03643682183 B82PBROWNING, ROBERT 174906080370  REC    3, LENGTH  3600
215          CCC11282167 R93PWALRAS, ROBERT          1749070928702Z1          04506065882 D256DDARTNELL
CORP.   1749080928702Z1          0450351554 G875BGRIFFITHS, RUTH   1749090928702Z1          044950
81138 W59YWMILLER, E. H.   1749110928702Z1          04490037133ON2131NAT. INF. CENTER 1749120928702
271          044H503C09 N42W NEW YORK TIMES   1749130928702Z1          044828664   N877PNOYES, RO
BERT   1749140928702Z1          C448009739178767WCC*BRIEN, P. J.   1749150928702Z1          044875
32747 SM53RSMITH, C. J.      1749160928702Z1          04479091730358T891STROUT, CUSHING   174918092870
271          044765          1749190928702Z1          04478034799 W2512
          1749200928702Z1          044710796   SH265SHAW, J. F.      1749210803702Z5          000157
7933 N582WBOLRMAN  ANATOLE 1749220803702Z5          00015925207 C368QCHAPPELL, C. G.   174923080370
215          C0C2408209 K287SKELLETT, E. E.      1749240803702Z5          C0025584O8 0X2 OXFORD BO
OK, 1957174925080370215          C00500821   CX2  OXFORD BOOK, 1967174926080370215          000605
61069 P871WPOWER, D'ARCY          1749270803702Z5          040135824   P875EPOWYS, LLEWELYN   174928080370
215          04027C9175 R136LRAINE, J. W.      1749290804702Z5          C0062580B8 R871TRUNES, D.
D.      1749300CRC370215          04028791469 ST24ISTANISLANSKI, CAN1749310C8C370215          059182
7595 ST31WSTEARNS, F. P.   1749320803702Z5          00070037815SST51ESTICKLER, W. H.   174933080370
215          059265396   G54WTTAYLOR, G. R. S. 1749340803702Z5          06010037019671214WTAYLOR, H
AROLD   1749350803702Z5          05998933094ZT437STICTNER, F. W.   1749360803702Z5          059925
78C07 LPBS UPTON, G. P.      1749370803702Z5          0007298109 V338EVAN NOSTRAND, A.D1749380803702
215          C008C0658CC1W125PWAGNER, H. P.      1749390803702Z5          0400657514 W672NWILLIAMS,
HIRAM   1749400921702Z6          0366365850O1AM35RAM. INST. OF I.E.1749610914702Z7          032244
372832C498CCITIZENSHIP ED.   1749620914702Z7          03200091336 C548MCLARK, J. G. D.   174963091470
257          C31965769   C582HCLEAVER, JAMES   1749640914702Z7          0319008104 EL594ELLIS, C.
M.      1749660914702Z7          031896701   F193AFALLICO, A. B.   1749670914702Z7          031875
2324S7F914DFRIEDMAN, MILTON 1749680914702Z7          0318503008 T157BTANNENBAUM, FRANK1749690914702
257          03174690193 T729CTREVOR-ROPER, H.R1749700914702Z7          0316823209449V972CVUCINICH,
W. S.   1749710921702Z6          036733350   W147IWALCO, CWIGHT   1749720921702Z6          036635
E092 W154PWALKLEY, A. R.   1749730914702Z7          03222597373 L515WWHITE, H. A.   174974091470
257          03215C37092 AL19KWEST, A. F.      1749750914702Z7          03212532102 W622
          1749760921702Z6          03660078124 W671SWILLIAMS, C. F.   1749770914702Z7          032100
309173K734VWINTER, J. A.      1749780914702Z7          032050821   Y84P YOUNG, EDWARD   1749790921702
264          036481821   Y84P YCLAG, EDWARD      1749800921702Z6          036550377R2 R449
          1749820921702Z6          026509282   G613WGCODIER, ALBAN   1749830907702Z0          025825
804   G695LGOSSE, E. W.      1749840907702Z0          02572579606 IN8P INT. CONGRESS   174985090770
250          025625248   M891JMLGGERIDGE, MALCC1749860907702Z0          0254756159   N2132NRC COM.
ON EFF. 1749870914702Z7          032912942   N844WNOTESTEIN, W.      1749880914702Z7          032800

338176P825 PORK INDUSTRY      1749890907702Z0          02647534242 P946SPROTHER, G. W.   1749900907702  REC    4, LENGTH  720
250          C263757C3   04A  CLICK, JOHN      1749910907702Z0          C2622597371R641CROLAND, C
. P.      1749920914702Z7          03272537973 SP62DSPITH, M. B.      1749930907702Z0          026200
338973S054PSOMERS, H. M.      1749940907702Z0          0260258409 T345HTHIBAUDET, ALBERT1749950907702
250          0259613805 T687          1749960907702Z0          02587589511 T782CTS*AI, T'
ING-KAN 1749980907702Z0          02585030144S7723BTRENT, J. W.      1749970914702Z7          032634
7594 FP25YWESHER, P. R.      1749990914702Z7          0326257595 B417YWIND, EDGAR          1750CC091470
257          C324CC
```

Problem C, Overdue Messages

Instructor's Notes:

This problem uses the tape prepared in problem B to send overdue notices to student with books returned, but overdue. It does not take into consideration books not returned, but overdue--it could be adjusted to do that without too much trouble. It keys the overdue message from the presence of a fine in the record. One of the control cards needed for this program is the same as one of the cards for the previous program. NEWFILE needs to be preserved for use in this program. The card is as follows:

// TLBL SYS016, 'NEWFILE' , , 999999

Special instructions to the operator are as follows:

Mount SCRATCH on X'181'.

Extensive use of the WØRKING-STØRAGE SECTIØN of the DATA DIVISIØN is made in this program for headings, inside address, salutation, body, complimentary close, signature, and office of the overdue message. A file of addresses on cards is searched for addressing the messages. The DISPLAY option is also found to be useful in this program. New devices used in the EXAMINE ...REPLACING ALL ... BY ...which is very handy in determining that data is valid, and the IF data name NØT NUMERIC ... test which is also a valuable device for checking the validity of a data field.

Class preparation includes having address cards prepared for all the records having overdue books. SØRT NEWFILE in numerical order by ID number before this program runs (see Appendix C).

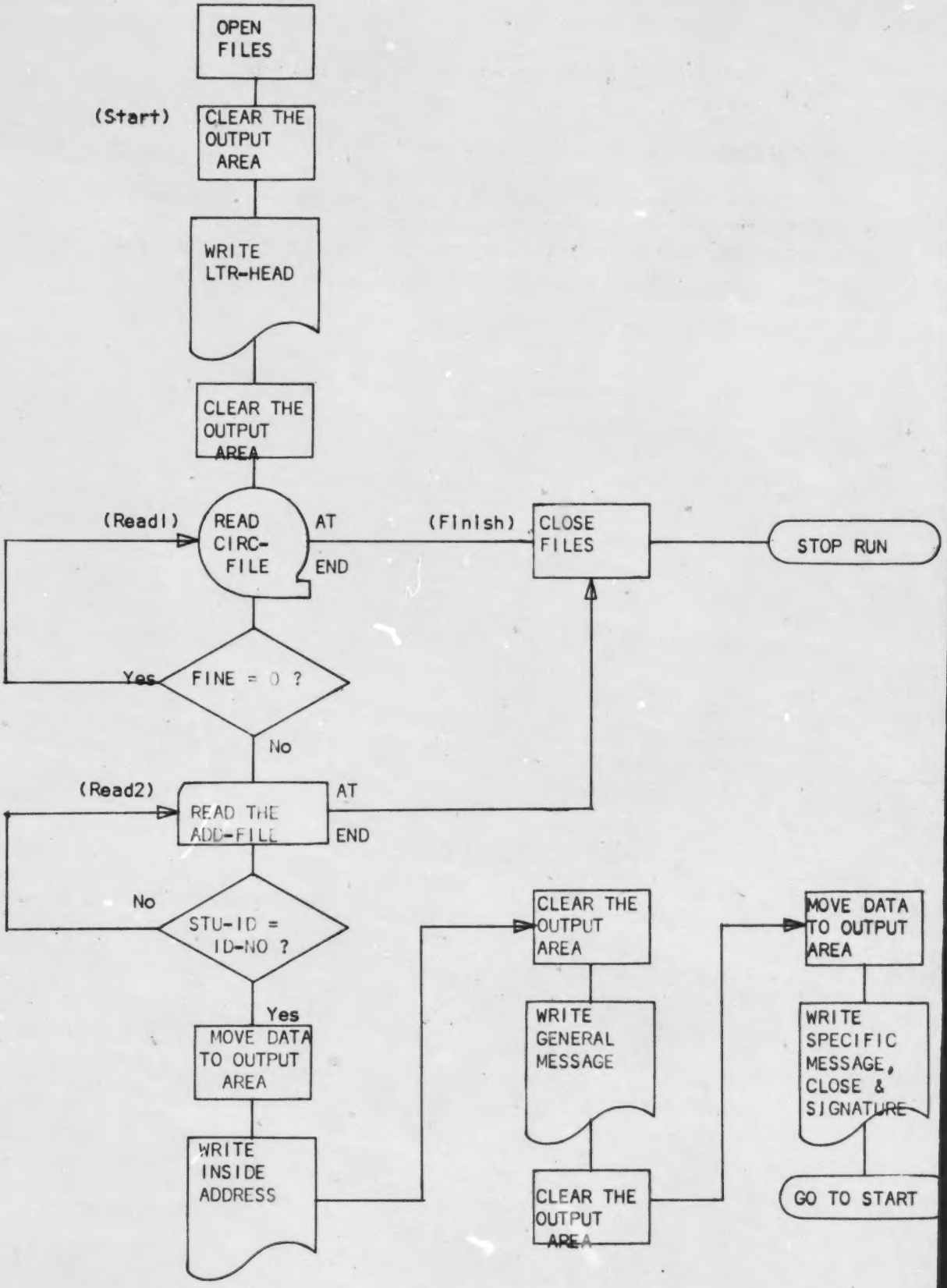
Parameters:

1. Address file
   - a. Name — cols. 1 - 20
   - b. Address — cols. 21 - 45
   - c. Place — cols. 46 - 65
   - d. Filler — cols. 66 - 74
   - e. ID number — cols. 75 - 80
2. Circulation file
   same as for problem B.
3. Letter
   Format of the letter is to be designed by the student with the

understanding that the address can be read through a windowed envelope.

Instructions:

Write a program that will produce an overdue letter having a common informative message concerning your overdue procedures, plus an individual message about the specific book overdue. You will use the updated file already created for part of your data base.



Suggested Solution
Problem C
Flowchart

Suggested Solution, Problem C, Program

```
LINE NO.  SEQ. NO.        SOURCE STATEMENT                              COBOL CL 7-7 11/18/70
      1   001010 IDENTIFICATION DIVISION.
      2   001020 PROGRAM-ID. 'OVERDUE'.
      3   001030 AUTHOR. SAD.
      4   001040 REMARKS. SUGGESTED SOLUTION TO UNIT 4, PROBLEM C.
      5   001050 ENVIRONMENT DIVISION.
      6   001060 CONFIGURATION SECTION.
      7   001670 SOURCE-COMPUTER. IBM-360.
      8   001680 OBJECT-COMPUTER. IBM-360.
      9   001685 INPUT-OUTPUT SECTION.
     10   001690 FILE-CONTROL.
     11   001695     SELECT CIRC-FILE ASSIGN TO 'SYS016' UTILITY 2400 UNIT.
     12   001700     SELECT ADDRESS-FILE ASSIGN TO 'SYS012' UNIT-RECORD 2540R.
     13   001710     SELECT LETTER-FILE ASSIGN TO 'SYS014' UNIT-RECORD 1403.
     14   001720 DATA DIVISION.
     15   001730 FILE SECTION.
     16   001740 FD  CIRC-FILE RECORDING MODE IS F, RECORD CONTAINS 60 CHARACTERS,
     17   001750     BLOCK CONTAINS 60 RECORDS, LABEL RECORDS ARE STANDARD, DATA
     18   001760     RECORD IS CIRC-RECORD.
     19   002010 01  CIRC-RECORD.
     20   002020     02  CALL-NUM.
     21   002030         03  CLASS-NUMA       PICTURE X(3).
     22   002035         03  CLASS-NUMB       PICTURE X(3).
     23   002040         03  AUTH-NUM         PICTURE X(5).
     24   002050     02  AUTH                 PICTURE X(17).
     25   002060     02  ACC-NUM              PICTURE 9(6).
     26   002070     02  DATE.
     27   002080         03  DUE.
     28   002090             04  MONTH        PICTURE 99.
     29   002100             04  DAY          PICTURE 99.
     30   002110             04  YEAR         PICTURE 99.
     31   002120             04  JULIAN       PICTURE 999.
     32   002130         03  RETURNED.
     33   002140             04  MNTH         PICTURE 99.
     34   002150             04  DY           PICTURE 99.
     35   002160             04  YR           PICTURE 99.
     36   002170     02  FINE                 PICTURE 999V99.
     37   002180     02  ID-NUM               PICTURE X(6).
     38   002190 FD  ADDRESS-FILE RECORDING MODE IS F, RECORD CONTAINS 80
     39   002200     CHARACTERS, LABEL RECORD IS OMITTED, DATA RECORD IS
     40   002205     ADDRESS-RECORD.
     41   003010 01  ADDRESS-RECORD.
     42   003020     02  NAME                 PICTURE X(20).
     43   003030     02  POST-OFF             PICTURE X(25).
     44   003040     02  PLACE                PICTURE X(20).
     45   003050     02  FILLER               PICTURE X(9).
     46   003060     02  IDENT-NO             PICTURE X(6).
     47   003070 FD  LETTER-FILE RECORDING MODE IS F, RECORD CONTAINS 133
     48   003080     CHARACTERS, LABEL RECORD IS OMITTED, DATA RECORD IS
     49   003085     LETTER-RECORD.
     50   003090 01  LETTER-RECORD            PICTURE X(133).
     51   003100 WORKING-STORAGE SECTION.
     52   003110 77  FINES                    PICTURE $ZZZ.99.
     53   003140 01 HEAD1.
     54   003150     02  FILLER               PICTURE X(12)  VALUE SPACES.
     55   003160     02  LIB-NAME             PICTURE A(16)  VALUE 'PRESCOTT LIBRAR
     56   003170-    'Y'.
     57   003180     02  FILLER               PICTURE X(85)  VALUE SPACES.
     58   003190 01 HEAD2.
     59   003200     02  FILLER               PICTURE X(28)  VALUE SPACES.
     60   004010     02  UNIV-NAME            PICTURE A(25)  VALUE 'LOUISIANA TECH
     61   004020-    'UNIVERSITY'.
     62   004030     02  FILLER               PICTURE X(80)  VALUE SPACES.
     63   004040 01  HEAD3.
     64   004050     02  FILLER               PICTURE X(29)  VALUE SPACES.
     65   004060     02  PLACE-NAME           PICTURE X(23)  VALUE 'RUSTON, LOUISIA
     66   004070-    'NA 71270'.
     67   004080     02  FILLER               PICTURE X(81)  VALUE SPACES.
     68   004090 01  HEAD4.
     69   004100     02  FILLER               PICTURE X(33)  VALUE SPACES.
     70   004110     02  LTR-DATE             PICTURE X(14)  VALUE SPACES.
     71   004120     02  FILLER               PICTURE X(86)  VALUE SPACES.
     72   004130 01  ADDRESS.
     73   004140     02  FILLER               PICTURE X(10)  VALUE SPACES.
     74   004150     02  ADD-LINE             PICTURE X(30)  VALUE SPACES.
     75   004160     02  FILLER               PICTURE X(93)  VALUE SPACES.
     76   004170 01  SALUTATION.
     77   004180     02  FILLER               PICTURE X(10)  VALUE SPACES.
     78   004190     02  SAL-LINE             PICTURE X(14)  VALUE 'DEAR TECHSTER:'
     79   004195     .
     80   004200     02  FILLER               PICTURE X(1109) VALUE SPACES.
     81   005010 01  LINE1.
     82   005020     02  FILLER       PICTURE X(10)   VALUE SPACES.
     83   005030     02  MESSAGE1     PICTURE A(63)   VALUE '     THE BOOK LISTED B
     84   005040-    'ELOW IS CHARGED TO YOU AND IS OVERDUE AS '.
     85   005050     02  FILLER       PICTURE X(60)   VALUE SPACES.
     86   005060 01  LINE2.
     87   005070     02  FILLER       PICTURE X(10)   VALUE SPACES.
     88   005080     02  MESSAGE2     PICTURE A(63)   VALUE 'INDICATED.  OVERDUE BO
     89   005090-    'OKS ACCUMULATE FINES IN THE AMOUNT OF    '.
     90   005100     02  FILLER       PICTURE X(60)   VALUE SPACES.
     91   005110 01  LINE3.
     92   005120     02  FILLER       PICTURE X(10)   VALUE SPACES.
     93   005130     02  MESSAGE3     PICTURE X(63)   VALUE '$.05 PER BOOK PER DAY.
     94   005140     '  WE REGRET THAT FINE SCHEDULES ARE      '.
     95   005150     02  FILLER       PICTURE X(60)   VALUE SPACES.
     96   005160 01  LINE4.
     97   005170     02  FILLER       PICTURE X(10)   VALUE SPACES.
     98   005180     02  MESSAGE4     PICTURE X(63)   VALUE 'NECESSARY, BUT TO ASSU
     99   005190-    'RE THAT ALL OUR STUDENTS HAVE OPPORTUNITY'.
    100   005200     02  FILLER       PICTURE X(60)   VALUE SPACES.
    101   006010 01  LINE5.
    102   006020     02  FILLER       PICTURE X(10)   VALUE SPACES.
    103   006030     02  MESSAGE5     PICTURE A(53)   VALUE 'TO USE LIBRARY MATERIA
    104   006040-    'LS, WE HAVE TO LEVY THESE CHARGES.  IF   '.
    105   006050     02  FILLER       PICTURE X(60)   VALUE SPACES.
    106   006060 01  LINE6.
    107   006070     02  FILLER       PICTURE X(10)   VALUE SPACES.
    108   006080     02  MESSAGE6     PICTURE A(63)   VALUE 'YOU DO NOT RETURN THE
    109   006090     'BOOK LISTED BY ONE WEEK FROM TODAY, WE   '.
    110   006100     02  FILLER       PICTURE X(60)   VALUE SPACES.
```

Suggested Solution, Problem C, Program (continued)

```
006110 01  LINE7.
006120     02  FILLER       PICTURE X(10)   VALUE SPACES.
006130     02  MESSAGE7     PICTURE X(43)   VALUE 'WILL ASSUME THE BOOK I
006140-    'S LOST, AND TO THE FINE A $2.00 PER BOOK '.
006145     02  FILLER       PICTURE X(60)   VALUE SPACES.
006150 01  LINE8.
006160     02  FILLER       PICTURE X(10)   VALUE SPACES.
006170     02  MESSAGE8     PICTURE A(63)   VALUE 'REPLACEMENT CHARGE IN
006180     'ADDITION TO THE COST OF THE BOOK, AND SO '.
006190     02  FILLER       PICTURE X(60)   VALUE SPACES.
006200 01  LINE9.
007010     02  FILLER       PICTURE X(10)   VALUE SPACES.
007020     02  MESSAGE9     PICTURE A(27) VALUE 'INFORM THE CUSTODIAN'.
007025     02  APOS         PICTURE X    VALUE QUOTE.
007026     02  MESSAGE      PICTURE A(40)  VALUE 'S OFFICE WITHOUT FURTHE
007027-    'R NOTICE.  PLEASE'.
007040     02  FILLER       PICTURE X(60)   VALUE SPACES.
007050 01  LINE10.
007060     02  FILLER       PICTURE X(10)   VALUE SPACES.
007070     02  MESSAGE10    PICTURE A(63)   VALUE 'LET US HEAR FROM YOU T
007080-    'ODAY.                                    '.
007090 01  LINE11.
007100     02  FILLER       PICTURE X(50)   VALUE SPACES.
007110     02  COMP-CLOSE   PICTURE A(10)   VALUE 'THANK YOU,'.
007120     02  FILLER       PICTURE X(73)   VALUE SPACES.
007130 01  LINE12.
007140     02  FILLER       PICTURE X(50)   VALUE SPACES.
007150     02  SIGNATURE    PICTURE A(21)   VALUE 'D. ALHENTI, LIBRARIAN'
007160     .
007170     02  FILLER       PICTURE X(62)   VALUE SPACES.
007180 01  LINE13.
007190     02  FILLER       PICTURE X(50)   VALUE SPACES.
007200     02  DEPARTMENT   PICTURE A(22)   VALUE 'CIRCULATION DEPARTMENT
00801C-    ''.
00802C PROCEDURE DIVISION.
00803C     OPEN INPUT CIRC-FILE, INPUT ADDRESS-FILE, OUTPUT LETTER-FILE.
008040 START. MOVE SPACES TO LETTER-RECORD.
008050     WRITE LETTER-RECORD FROM HEAD1 AFTER 0 LINES.
008060     WRITE LETTER-RECORD FROM HEAD2 AFTER 1 LINES.
00807C     WRITE LETTER-RECORD FROM HEAD3 AFTER 1 LINES.
008075     MOVE 'SEPT. 20, 1970' TO LTR-DATE.
008090     WRITE LETTER-RECORD FROM HEAD4 AFTER 1 LINES.
008100     MOVE SPACES TO LETTER-RECORD.
008105     WRITE LETTER-RECORD AFTER 3 LINES.
008110 READ1. READ CIRC-FILE AT END GO TO FINISH.
008117     IF FINE NOT NUMERIC DISPLAY '                INVALID FINE DATA: '
008118     FINE, ' - ACCESSION NUMBER: ' ACC-NUM, GO TO READ1.
008120     IF FINE = 0 GO TO READ1.
008130 READ2. READ ADDRESS-FILE AT END GO TO READ1.
008140     IF ID-NUM NOT EQUAL TO IDENT-NO GO TO READ2.
00815C     MOVE NAME TO ADD-LINE.
008160     WRITE LETTER-RECORD FROM ADDRESS AFTER 3 LINES.
008170     MOVE POST-OFF TO ADD-LINE.
008180     WRITE LETTER-RECORD FROM ADDRESS AFTER 1 LINES.
00819C     MOVE PLACE TO ADD-LINE.
0082C0     WRITE LETTER-RECORD FROM ADDRESS AFTER 1 LINES.
008210     WRITE LETTER-RECORD FROM SALUTATION AFTER 2 LINES.
009010     WRITE LETTER-RECORD FROM LINE1 AFTER 2 LINES.
009020     WRITE LETTER-RECORD FROM LINE2 AFTER 1 LINES.
009030     WRITE LETTER-RECORD FROM LINE3 AFTER 1 LINES.
009040     WRITE LETTER-RECORD FROM LINE4 AFTER 1 LINES.
009050     WRITE LETTER-RECORD FROM LINE5 AFTER 1 LINES.
009060     WRITE LETTER-RECORD FROM LINE6 AFTER 1 LINES.
009070     WRITE LETTER-RECORD FROM LINE7 AFTER 1 LINES.
009080     WRITE LETTER-RECORD FROM LINE8 AFTER 1 LINES.
009090     WRITE LETTER-RECORD FROM LINE9 AFTER 1 LINES.
009100     WRITE LETTER-RECORD FROM LINE10 AFTER 1 LINES.
009110     MOVE SPACES TO LETTER-RECORD.
009120     WRITE LETTER-RECORD AFTER 2 LINES.
009130     DISPLAY '          CALL-NUMBER: ' CLASS-NUMA '.' CLASS-NUMB
009140     '/' AUTH-NUM ' AUTHOR: ' AUTH.
009145     MOVE SPACES TO LETTER-RECORD.
009150     WRITE LETTER-RECORD AFTER 1 LINES. MOVE FINE TO FINES.
009160     DISPLAY '          ACCESSION NUMBER: ' ACC-NUM '  FINE AT THI
009170-    'S WRITING: '  FINES.
009180     WRITE LETTER-RECORD FROM LINE11 AFTER 3 LINES.
009190     WRITE LETTER-RECORD FROM LINE12 AFTER 2 LINES.
009200     WRITE LETTER-RECORD FROM LINE13 AFTER 2 LINES.
009210     GO TO START.
010010 FINISH. CLOSE CIRC-FILE, ADDRESS-FILE, LETTER-FILE.
010020     STOP RUN.
```

Suggested Solution, Problem C, Sample Printouts (continued)

PRESCOTT LIBRARY
LOUISIANA TECH UNIVERSITY
RUSTON, LOUISIANA 71270
SEPT. 20, 1970

ACAIR LARAINE E
P O BOX 644, TECH STA
RUSTON, LA

DEAR TECHSTER:

THE BOOK LISTED BELOW IS CHARGED TO YOU AND IS OVERDUE AS INDICATED. OVERDUE BOOKS ACCUMULATE FINES IN THE AMOUNT OF $.05 PER BOOK PER DAY. WE REGRET THAT FINE SCHEDULES ARE NECESSARY, BUT TO ASSURE THAT ALL OUR STUDENTS HAVE OPPORTUNITY TO USE LIBRARY MATERIALS, WE HAVE TO LEVY THESE CHARGES. IF YOU DO NOT RETURN THE BOOK LISTED BY ONE WEEK FROM TODAY, WE WILL ASSUME THE BOOK IS LOST, ADD TO THE FINE A $2.00 PER BOOK REPLACEMENT CHARGE IN ADDITION TO THE COST OF THE BOOK, AND SO INFORM THE COMPTROLLER'S OFFICE WITHOUT FURTHER NOTICE. PLEASE LET US HEAR FROM YOU TODAY.

CALL-NUMBER: 808.820/AP3SS AUTHOR: A* . LIO. ASN.

ACCESSION NUMBER: C41819 FINE AT THIS WRITING: $ 2.45

THANK YOU,

D. ALBERTI, LIBRARIAN

CIRCULATION DEPARTMENT

PRESCOTT LIBRARY
LOUISIANA TECH UNIVERSITY
RUSTON, LOUISIANA 71270
SEPT. 20, 1970

ACKINS DIANE
P O BOX 469, TECH STA
RUSTON, LA

DEAR TECHSTER:

THE BOOK LISTED BELOW IS CHARGED TO YOU AND IS OVERDUE AS INDICATED. OVERDUE BOOKS ACCUMULATE FINES IN THE AMOUNT OF $.05 PER BOOK PER DAY. WE REGRET THAT FINE SCHEDULES ARE NECESSARY, BUT TO ASSURE THAT ALL OUR STUDENTS HAVE OPPORTUNITY TO USE LIBRARY MATERIALS, WE HAVE TO LEVY THESE CHARGES. IF YOU DO NOT RETURN THE BOOK LISTED BY ONE WEEK FROM TODAY, WE WILL ASSUME THE BOOK IS LOST, ADD TO THE FINE A $2.00 PER BOOK REPLACEMENT CHARGE IN ADDITION TO THE COST OF THE BOOK, AND SO INFORM THE COMPTROLLER'S OFFICE WITHOUT FURTHER NOTICE. PLEASE LET US HEAR FROM YOU TODAY.

CALL-NUMBER: 793.3C7/IN4P AUTHOR: INGRAM, A. G.

ACCESSION NUMBER: 168877 FINE AT THIS WRITING: $ .35

THANK YOU,

D. ALBERTI, LIBRARIAN

CIRCULATION DEPARTMENT

PRESCOTT LIBRARY
LOUISIANA TECH UNIVERSITY
RUSTON, LOUISIANA 71270
SEPT. 20, 1970

AIKEN EARL HOWARD JR
P O BOX 647, TECH STA
RUSTON, LA

DEAR TECHSTER:

THE BOOK LISTED BELOW IS CHARGED TO YOU AND IS OVERDUE AS INDICATED. OVERDUE BOOKS ACCUMULATE FINES IN THE AMOUNT OF $.05 PER BOOK PER DAY. WE REGRET THAT FINE SCHEDULES ARE NECESSARY, BUT TO ASSURE THAT ALL OUR STUDENTS HAVE OPPORTUNITY TO USE LIBRARY MATERIALS, WE HAVE TO LEVY THESE CHARGES. IF YOU DO NOT RETURN THE BOOK LISTED BY ONE WEEK FROM TODAY, WE WILL ASSUME THE BOOK IS LOST, ADD TO THE FINE A $2.00 PER BOOK REPLACEMENT CHARGE IN ADDITION TO THE COST OF THE BOOK, AND SO INFORM THE COMPTROLLER'S OFFICE WITHOUT FURTHER NOTICE. PLEASE LET US HEAR FROM YOU TODAY.

CALL-NUMBER: 759.5 /ST31W AUTHOR: STEARNS, F. P.

ACCESSION NUMBER: 174932 FINE AT THIS WRITING: $ .10

THANK YOU,

D. ALBERTI, LIBRARIAN

CIRCULATION DEPARTMENT

PRESCOTT LIBRARY
LOUISIANA TECH UNIVERSITY
RUSTON, LOUISIANA 71270
SEPT. 20, 1970

BOYTER JAMES KENNETH
APT 129, PEACH ST
RUSTON, LA

DEAR TECHSTER:

THE BOOK LISTED BELOW IS CHARGED TO YOU AND IS OVERDUE AS INDICATED. OVERDUE BOOKS ACCUMULATE FINES IN THE AMOUNT OF $.05 PER BOOK PER DAY. WE REGRET THAT FINE SCHEDULES ARE NECESSARY, BUT TO ASSURE THAT ALL OUR STUDENTS HAVE OPPORTUNITY TO USE LIBRARY MATERIALS, WE HAVE TO LEVY THESE CHARGES. IF YOU DO NOT RETURN THE BOOK LISTED BY ONE WEEK FROM TODAY, WE WILL ASSUME THE BOOK IS LOST, ADD TO THE FINE A $2.00 PER BOOK REPLACEMENT CHARGE IN ADDITION TO THE COST OF THE BOOK, AND SO INFORM THE COMPTROLLER'S OFFICE WITHOUT FURTHER NOTICE. PLEASE LET US HEAR FROM YOU TODAY.

CALL-NUMBER: 909.9 /M36C AUTHOR: MARVIN, FRANCIS

ACCESSION NUMBER: C13293 FINE AT THIS WRITING: $ 2.50

THANK YOU,

D. ALBERTI, LIBRARIAN

CIRCULATION DEPARTMENT

Problem D, Statistical Count

Instructor's Notes:

CIRC-FILE from the previous programs will constitute the data base for this problem. Since the file is in ascending accession number order, it will have to be sorted into call number order to do what this problem calls for. Since the students have not worked with disk files at this point, the instructor should be responsible for getting the file in order by call number.

The purpose of this problem is to print out a list in call number order which could be used at the circulation desk as a circulation record of books charged out. It will also give the student an opportunity to begin statistical manipulations which can be used for many purposes. Extensive use of the WØRKING-STØRAGE SECTIØN is used as well as more arithmetic than the student has attempted thus far, and the DISPLAY option is found to be very useful in this problem.

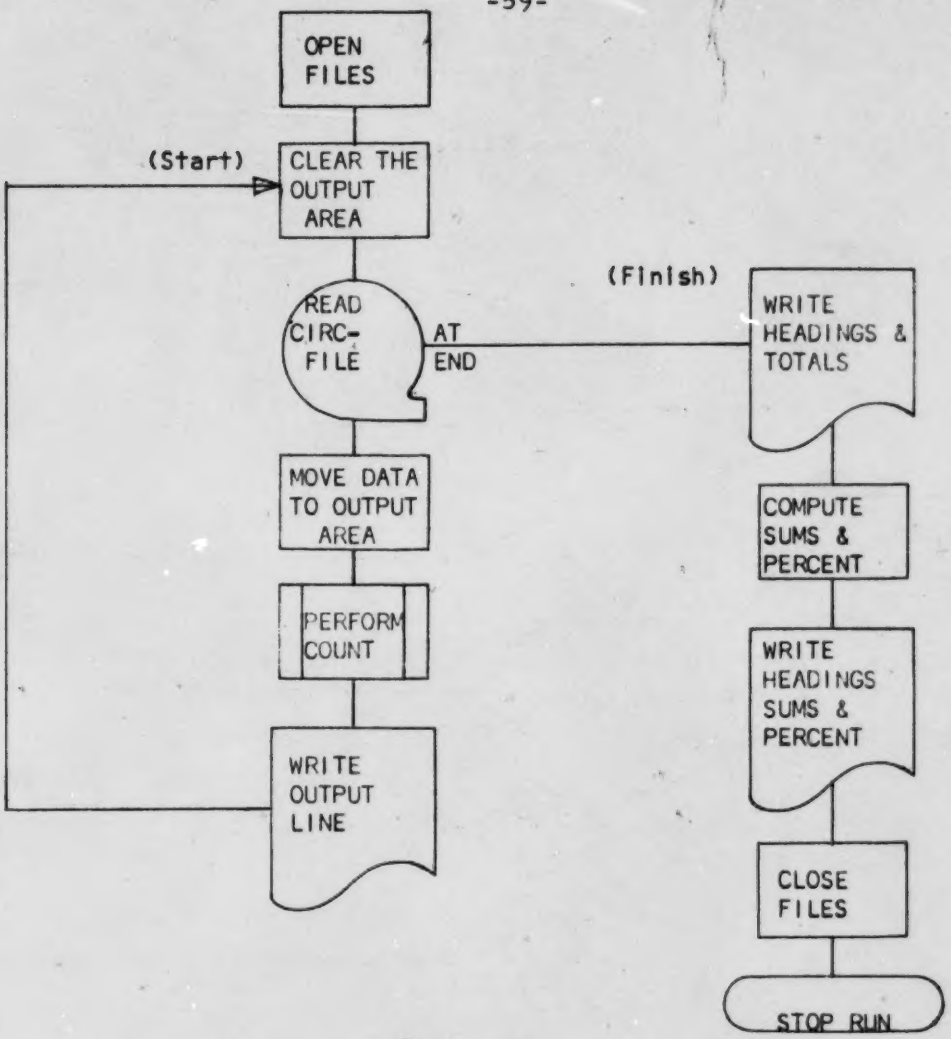
Preparation for class will involve sorting the CIRC-FILE in call number order. The program will be similar to that in Appendix A, and one is suggested in Appendix B. Until the class has had some experience with disk files, it is perhaps better that the instructor do this sorting.

Parameters:

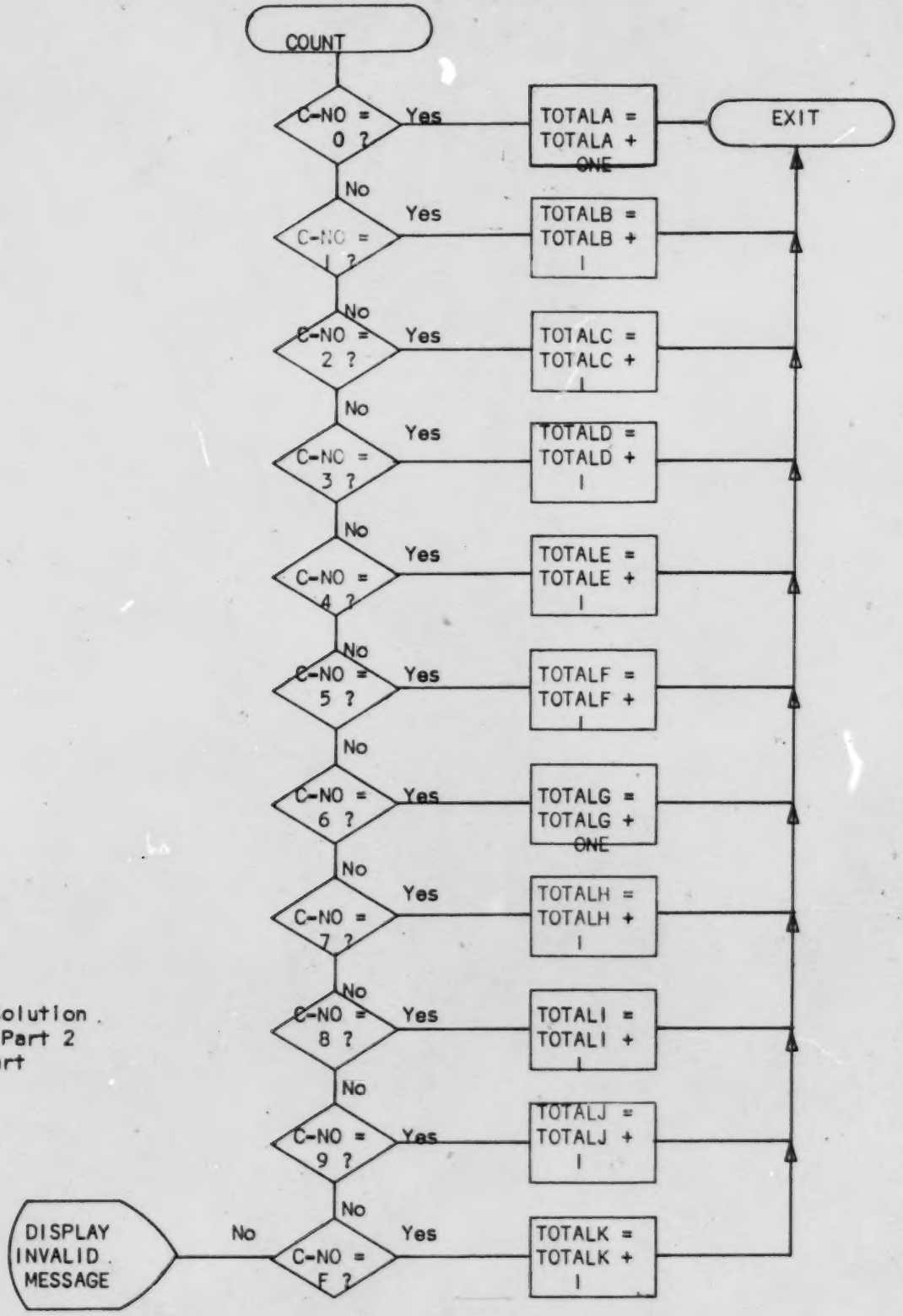
1. Circulation file - same as in previous problems in this unit.
2. Circulation list - the student will design the output format including headings and labels for the total figures computed.

Instructions:

Write a program that publishes a list of the books in circulation by call number, counts the books by the first summary of the Dewey Classification number, groups and counts the total number of books in circulation in Humanities, Sciences, and Creative Arts, prints the totals of all of the above, figures the percentage of the total in circulation in the Humanities, Sciences, and Creative Arts, and assigns that percent of $250,000 as a budget for book purchases.



Suggested Solution
Problem D, Part I
Flowchart



Suggested Solution
Problem D, Part 2
Flowchart

Suggested Solution, Problem D, Program

```
LINE NO.  SEQ. NO.          SOURCE STATEMENT                                  COBOL CL3-7 10/29/70

      1   001010 IDENTIFICATION DIVISION.
      2   001020 PROGRAM-ID. 'STATCNT'.
      3   001030 AUTHOR. SAD.
      4   001040 REMARKS. SUGGESTED SOLUTION TO UNIT 4, PROBLEM D.
      5   001050 ENVIRONMENT DIVISION.
      6   001060 CONFIGURATION SECTION.
      7   001070 SOURCE-COMPUTER. IBM-360.
      8   001080 OBJECT-COMPUTER. IBM-360.
      9   001090 INPUT-OUTPUT SECTION.
     10   001100 FILE-CONTROL.
     11   001110     SELECT CIRC-FILE ASSIGN TO 'SYS016' UTILITY 2400 UNIT.
     12   001120     SELECT PRINT-FILE ASSIGN TO 'SYS014' UNIT-RECORD 1403.
     13   001130 DATA DIVISION.
     14   001140 FILE SECTION.
     15   001150 FD  CIRC-FILE RECORDING MODE IS F, RECORD CONTAINS 60 CHARACTERS,
     16   001160     BLOCK CONTAINS 60 RECORDS, LABEL RECORDS ARE STANDARD, DATA
     17   001170     RECORD IS CIRC-RECORD.
     18   002010 01  CIRC-RECORD.
     19   002020     02  CALL-NO.
     20   002030         03  CLASS-NOA.
     21   002040             04  C-NO          PICTURE X.
     22   002050             04  NO-2          PICTURE XX.
     23   002060         03  CLASS-NOB         PICTURE XXX.
     24   002070         03  AUTH-NO           PICTURE X(5).
     25   002080     02  AUTHOR                PICTURE X(17).
     26   002090     02  ACC-NO                PICTURE 9(6).
     27   002100     02  DATE.
     28   002110         03  DUE.
     29   002120             04  MONTH         PICTURE 99.
     30   002130             04  DAY           PICTURE 99.
     31   002140             04  YEAR          PICTURE 99.
     32   002150             04  JULIAN        PICTURE 999.
     33   002160         03  RETURNED.
     34   002170             04  MATH          PICTURE 99.
     35   002180             04  DY            PICTURE 99.
     36   002190             04  YR            PICTURE 99.
     37   002200     02  FINE                  PICTURE 999V99.
     38   003010     02  ID-NO                 PICTURE 9(6).
     39   003020 FD  PRINT-FILE RECORDING MODE IS F, RECORD CONTAINS 133
     40   003030     CHARACTERS, LABEL RECORDS ARE OMITTED, DATA RECORD IS
     41   003040     PRINT-LINE.
     42   003050 01  PRINT-LINE.
     43   003060     02  FILLER                PICTURE X(133).
     44   003070 WORKING-STORAGE SECTION.
     45   003080 77  TOTALA                    PICTURE 9999   VALUE ZERO.
     46   003090 77  TOTALB                    PICTURE 9999   VALUE ZERO.
     47   003100 77  TOTALC                    PICTURE 9999   VALUE ZERO.
     48   003110 77  TOTALD                    PICTURE 9999   VALUE ZERO.
     49   003120 77  TOTALE                    PICTURE 9999   VALUE ZERO.
     50   003130 77  TOTALF                    PICTURE 9999   VALUE ZERO.
     51   003140 77  TOTALG                    PICTURE 9999   VALUE ZERO.
     52   003150 77  TOTALH                    PICTURE 9999   VALUE ZERO.
     53   003160 77  TOTALI                    PICTURE 9999   VALUE ZERO.
     54   003170 77  TOTALJ                    PICTURE 9999   VALUE ZERO.
     55   003180 77  TOTALK                    PICTURE 9999   VALUE ZERO.
     56   003190 77  PERCENTA                  PICTURE 99V99  VALUE ZERO.
     57   003200 77  PERCENTB                  PICTURE 99V99  VALUE ZERO.
     58   004010 77  PERCENTC                  PICTURE 99V99  VALUE ZERO.
     59   004020 77  PERCENTD                  PICTURE 99V99  VALUE ZERO.
     60   004030 77  PERCENTE                  PICTURE 99V99  VALUE ZERO.
     61   004040 77  PERCENTF                  PICTURE 99V99  VALUE ZERO.
     62   004050 77  PERCENTG                  PICTURE 99V99  VALUE ZERO.
     63   004060 77  PERCENTH                  PICTURE 99V99  VALUE ZERO.
     64   004070 77  PERCENTI                  PICTURE 99V99  VALUE ZERO.
     65   004080 77  PERCENTJ                  PICTURE 99V99  VALUE ZERO.
     66   004090 77  PERCENTK                  PICTURE 99V99  VALUE ZERO.
     67   004100 77  SUM                       PICTURE 9(8)   VALUE ZERO.
     68   004110 77  COUNTER                   PICTURE 99     VALUE ZERO.
     69   004120 77  HUMANITIES                PICTURE 9(6)V99 VALUE ZERO.
     70   004130 77  SCIENCES                  PICTURE 9(6)V99 VALUE ZERO.
     71   004140 77  CREATIVE-ARTS             PICTURE 9(6)V99 VALUE ZERO.
     72   004150 77  ALLOT-A                   PICTURE $ZZZ,ZZZ.99.
     73   004160 77  ALLOT-B                   PICTURE $ZZZ,ZZZ.99.
     74   004170 77  ALLOT-C                   PICTURE $ZZZ,ZZZ.99.
     75   005010 01  H-1.
     76   005020     02  FILLER          PICTURE X(51)  VALUE SPACES.
     77   005030     02  LIB-NAME        PICTURE A(16)  VALUE 'PRESCOTT LIBRARY'.
     78   005040     02  FILLER          PICTURE X(66)  VALUE SPACES.
     79   005050 01  H-2.
     80   005060     02  FILLER          PICTURE X(50)  VALUE SPACES.
     81   005070     02  DEPT            PICTURE A(18)  VALUE 'CIRCULATION RECORD'.
     82   005080     02  FILLER          PICTURE X(65)  VALUE SPACES.
     83   005090 01  H-3.
     84   005100     02  FILLER          PICTURE X(11)  VALUE SPACES.
     85   005110     02  LABEL1          PICTURE A(11)  VALUE 'CALL NUMBER'.
     86   005120     02  FILLER          PICTURE X(8)   VALUE SPACES.
     87   005130     02  LABEL2          PICTURE A(6)   VALUE 'AUTHOR'.
     88   005140     02  FILLER          PICTURE X(27)  VALUE SPACES.
     89   005150     02  LABEL3          PICTURE A(3)   VALUE 'DUE'.
     90   005160     02  FILLER          PICTURE X(8)   VALUE SPACES.
     91   005170     02  LABEL4          PICTURE A(8)   VALUE 'RETURNED'.
     92   005180     02  FILLER          PICTURE X(6)   VALUE SPACES.
     93   005190     02  LABEL5          PICTURE A(5)   VALUE 'FINES'.
     94   005200     02  FILLER          PICTURE X(6)   VALUE SPACES.
     95   006010     02  LABEL6          PICTURE A(6)   VALUE 'ID NO.'.
     96   006020     02  FILLER          PICTURE X(28)  VALUE SPACES.
     97   006030 01  LINE.
     98   006040     02  FILLER          PICTURE X(10)  VALUE SPACES.
     99   006050     02  CALL-NUM.
    100   006060         03  CLASS-NUMA.
    101   006070             04  C-NUM   PICTURE X     VALUE SPACES.
    102   006080             04  NUM-2   PICTURE XX    VALUE SPACES.
    103   006090             04  POINT   PICTURE A     VALUE '.'.
    104   006100         03  CLASS-NUMB  PICTURE XXX   VALUE SPACES.
    105   006110         03  SLASH       PICTURE X     VALUE '/'.
    106   006120         03  AUTH-NUM    PICTURE X(5)  VALUE SPACES.
    107   006130     02  FILLER          PICTURE X(5)   VALUE SPACES.
    108   006140     02  AUTH-NAME       PICTURE X(17)  VALUE SPACES.
    109   006150     02  FILLER          PICTURE X(5)   VALUE SPACES.
    110   006160     02  ACC-NUM         PICTURE 9(6)   VALUE ZERO.
    111   006170     02  FILLER          PICTURE X(5)   VALUE SPACES.
    112   006180     02  DATES.
    113   006190         03  DUES.
    114   006200             04  MO      PICTURE Z9.
    115   007010             04  HYPI    PICTURE X      VALUE '-'.
    116   007020             04  DA      PICTURE Z9.
```

Suggested Solution, Problem D, Program (continued)

```
007030            04  HYP2   PICTURE X      VALUE '-'.
007040            04  YE     PICTURE 99     VALUE ZERO.
007050            04  FILLER PICTURE X      VALUE SPACE.
007060            04  J-D    PICTURE ZZ9.
007070            04  FILLER PICTURE X      VALUE SPACE.
007080        01  RETURNS.
007090            04  PATHS  PICTURE Z9.
007100            04  HYP3   PICTURE X      VALUE '-'.
007110            04  DYS    PICTURE Z9.
007120            04  HYP4   PICTURE X      VALUE '-'.
007130            04  YRS    PICTURE 99     VALUE ZERO.
007140      02  FILLER       PICTURE X(5)   VALUE SPACE.
007150      02  FINES        PICTURE $ZZZ.99.
007160      02  FILLER       PICTURE X(5)   VALUE SPACE.
007170      02  ID-NUM       PICTURE 9(6)   VALUE ZERO.
007180      02  FILLER       PICTURE X(28)  VALUE SPACE.
008010 PROCEDURE DIVISION.
008020     OPEN INPUT CIRC-FILE, OUTPUT PRINT-FILE.
008030 START. MOVE SPACES TO PRINT-LINE.
008040     WRITE PRINT-LINE AFTER 0 LINES.
008050     WRITE PRINT-LINE FROM H-1 AFTER 1 LINES.
008060     WRITE PRINT-LINE FROM H-2 AFTER 2 LINES.
008070     WRITE PRINT-LINE FROM H-3 AFTER 3 LINES.
008080     MOVE SPACES TO PRINT-LINE.
008090     WRITE PRINT-LINE AFTER 2 LINES.
008100     COMPUTE COUNTER = 0.
008110 BEGIN. READ CIRC-FILE AT END GO TO FINISH.
008120     MOVE C-NO       TO C-NUM.
008130     MOVE AC-2       TO NUM-2.
008140     MOVE CLASS-NO   TO CLASS-NUMB.
008150     MOVE AUTH-NO TO AUTH-NUM.
008160     MOVE AUTHOR     TO AUTH-NAME.
008170     MOVE ACC-NO     TO ACC-NUM.
008180     MOVE MONTH      TO MO.
008190     MOVE DAY        TO DA.
008200     MOVE YEAR       TO YE.
009010     MOVE JULIAN     TO J-D.
009020     MOVE PATH       TO PATHS.
009030     MOVE DY         TO DYS.
009040     MOVE YR         TO YRS.
009050     MOVE FINE       TO FINES.
009060     MOVE ID-NO      TO ID-NUM.
009070     PERFORM COUNT.
009080 PRINT. WRITE PRINT-LINE FROM LINE AFTER 1 LINES.
009090     COMPUTE COUNTER = COUNTER + 1.
009100     IF COUNTER = 55 OR COUNTER > 55 GO TO START ELSE GO TO BEGIN.
009110 COUNT. IF C-NO = 0 COMPUTE TOTALA = TOTALA + 1, COMPUTE SUM =
009115       SUM + 1, GO TO PRINT.
009120     IF C-NO = 1 COMPUTE TOTALB = TOTALB + 1, COMPUTE SUM = SUM +
009125       1, GO TO PRINT.
009130     IF C-NO = 2 COMPUTE TOTALC = TOTALC + 1, COMPUTE SUM = SUM +
009135       1, GO TO PRINT.
009140     IF C-NO = 3 COMPUTE TOTALD = TOTALD + 1, COMPUTE SUM = SUM +
009145       1, GO TO PRINT.
009150     IF C-NO = 4 COMPUTE TOTALE = TOTALE + 1, COMPUTE SUM = SUM +
009155       1, GO TO PRINT.
009160     IF C-NO = 5 COMPUTE TOTALF = TOTALF + 1, COMPUTE SUM = SUM +
009165       1, GO TO PRINT.
009170     IF C-NO = 6 COMPUTE TOTALG = TOTALG + 1, COMPUTE SUM = SUM +
009175       1, GO TO PRINT.
009180     IF C-NO = 7 COMPUTE TOTALH = TOTALH + 1, COMPUTE SUM = SUM +
009185       1, GO TO PRINT.
009190     IF C-NO = 8 COMPUTE TOTALI = TOTALI + 1, COMPUTE SUM = SUM +
009195       1, GO TO PRINT.
009200     IF C-NO = 9 COMPUTE TOTALJ = TOTALJ + 1, COMPUTE SUM = SUM +
009205       1, GO TO PRINT.
010010     IF C-NO = 'X' COMPUTE TOTALK = TOTALK + 1, COMPUTE SUM = SUM
010015       + 1, ELSE DISPLAY '          INVALID NUMBER: ' C-NO
010020       ', ACCESSION NUMBER: ' ACC-NO, COMPUTE COUNTER = COUNTER +
010025       1.
010030 FINISH. MOVE SPACES TO PRINT-LINE. WRITE PRINT-LINE AFTER 2 LINES
010040     .
010050     DISPLAY '          TOTAL GENERAL WORKS IN CIRCULATION:    '
010060     TOTALA.
010070     DISPLAY '          TOTAL PHILOSOPHY IN CIRCULATION:       '
010080     TOTALB.
010090     DISPLAY '          TOTAL RELIGION IN CIRCULATION:         '
010100     TOTALC.
010110     DISPLAY '          TOTAL SOCIAL SCIENCES IN CIRCULATION:  '
010120     TOTALD.
010130     DISPLAY '          TOTAL LANGUAGES IN CIRCULATION:        '
010140     TOTALE.
010150     DISPLAY '          TOTAL PURE SCIENCES IN CIRCULATION:    '
010160     TOTALF.
010170     DISPLAY '          TOTAL APPLIED SCIENCES IN CIRCULATION: '
010180     TOTALG.
010190     DISPLAY '          TOTAL FINE ARTS IN CIRCULATION:        '
010200     TOTALH.
010210     DISPLAY '          TOTAL LITERATURE IN CIRCULATION:       '
010220     TOTALI.
011010     DISPLAY '          TOTAL HISTORY IN CIRCULATION:          '
011020     TOTALJ.
011030     DISPLAY '          TOTAL FICTION IN CIRCULATION:          '
011040     TOTALK.
011050     COMPUTE PERCENTA ROUNDED = TOTALA / SUM.
011060     COMPUTE PERCENTB ROUNDED = TOTALB / SUM.
011070     COMPUTE PERCENTC ROUNDED = TOTALC / SUM.
011080     COMPUTE PERCENTD ROUNDED = TOTALD / SUM.
011090     COMPUTE PERCENTE ROUNDED = TOTALE / SUM.
011100     COMPUTE PERCENTF ROUNDED = TOTALF / SUM.
011110     COMPUTE PERCENTG ROUNDED = TOTALG / SUM.
011120     COMPUTE PERCENTH ROUNDED = TOTALH / SUM.
011130     COMPUTE PERCENTI ROUNDED = TOTALI / SUM.
011140     COMPUTE PERCENTJ ROUNDED = TOTALJ / SUM.
011150     COMPUTE PERCENTK ROUNDED = TOTALK / SUM.
011160     COMPUTE HUMANITIES ROUNDED = 250000 * (PERCENTA + PERCENTB +
011170        PERCENTC + PERCENTI).
011180     COMPUTE SCIENCES ROUNDED = 250000 * (PERCENTE + PERCENTF).
011190     COMPUTE CREATIVE-ARTS ROUNDED = 250000 * (PERCENTH
011200        + PERCENTI + PERCENTJ + PERCENTK).
012010     MOVE HUMANITIES TO ALLOT-A.
012020     MOVE SCIENCES   TO ALLOT-B.
012030     MOVE CREATIVE-ARTS TO ALLOT-C.
012040     MOVE SPACES TO PRINT-LINE.
012050     WRITE PRINT-LINE AFTER 2 LINES.
012060     DISPLAY '          HUMANITIES ALLOTMENT:     ' ALLOT-A.
012070     DISPLAY '          SCIENCES ALLOTMENT:       ' ALLOT-B.
012080     DISPLAY '          CREATIVE ARTS ALLOTMENT:  ' ALLOT-C.
012090     CLOSE CIRC-FILE, PRINT-FILE.
012100     STOP RUN.
```

Suggested Solution, Problem D, Printout

PRESCOTT LIBRARY

CIRCULATION RECORD

CALL NUMBER	AUTHOR		DUE	RETURNED	FINES	ID NO.
INVALID NUMBER:	. ACCESSION NUMBER: 174919					
. /		174919	9-28-70 271	0- 0-	$ .00	044780
F . /AS23M	ASCH, SHOLEM	174701	9-21-70 264	0- 0-	$ .00	036100
F . /D934C	DURHAM, R. L.	174771	9-24-70 271	0- 0-	$ .00	044413
F . /ED59S	EDMUNDS, PURNELL	174772	8- 3-70 215	0- 0-	$ .00	291485
F . /ER8GA	ERSKINE, JOHN	174702	9-21-70 264	0- 0-	$ .00	036150
F . /G1272	GAINES, E. J.	174703	9-21-70 264	0- 0-	$ .00	036185
F . /G6532	GORDON, C. W.	174775	8- 3-70 215	0- 0-	$ .00	973256
F . /H189C	HAMSUN, KNUT	174705	9-21-70 264	0- 0-	$ .00	036200
F . /H939C	HOWELLS, W. D.	174706	9-21-70 264	0- 0-	$ .00	036223
F . /L621H	LIEBER, JOEL	174776	9-28-70 271	0- 0-	$ .00	044490
F . /M187R	MCINTYRE, MANJOR.	174707	9-21-70 264	0- 0-	$ .00	036315
F . /OF6W	OFFLER, MARIE	174777	9-28-70 271	0- 0-	$ .00	044450
F . /S1645	SINGH, KHUSHWANT	174779	8- 3-70 215	0- 0-	$ .00	119453
F . /SM56F	SMITH, F. H.	174708	9-21-70 264	0- 0-	$ .00	036428
F . /W242G	WARNER, C. D.	174780	9-21-70 264	0- 0-	$ .00	036436
F . /Y271F	YATES, DOROTHY	174709	9-21-70 264	0- 0-	$ .00	036400
015.73 /L532P	LEIDY, W. P.	168832	9- 7-70 250	0- 0-	$ .00	026640
017.53 /M17A	MC GAFFIN, WILL.	168369	9- 7-70 250	0- 0-	$ .00	026800
020.75 /SM63F	SMITH, P. J.	168818	9- 7-70 250	0- 0-	$ .00	026875
021.4 /B657L	BOSTWICK, A. E.	168496	9- 7-70 250	0- 0-	$ .00	026300
025. /D231W	DANMARKS BIBLIOTE	168173	9- 7-70 250	0- 0-	$ .00	027036
025.1 /M838L	MORSE, P. M.	169174	9- 7-70 250	0- 0-	$ .00	027050
025.3 /N213S	N. Y. A. OF U. S.	168858	9- 7-70 250	0- 0-	$ .00	027085
027.1 /N481E	NEWTON, A. E.	169148	8-31-70 243	0- 0-	$ .00	023200
027.7 /F987F	FUSSLER, HERMAN	168078	8-31-70 243	0- 0-	$ .00	023315
027.82 /T229T	TEEN AGE LIB. ASS	168389	8-31-70 243	0- 0-	$ .00	023375
028.1 /D249R	DARLING, R. L.	168167	8-31-70 243	0- 0-	$ .00	023586
028.5 /M939T	MERLTMANN, HETTIN	168317	8-31-70 243	0- 0-	$ .00	023650
029.7 /UN31	U. S. A. STANDARD	168870	8-31-70 243	0- 0-	$ .00	023675
031.62 /T4821	TIMBS, JOHN	168731	8-31-70 243	9- 3-70	$ .15	023743
070. /W643E	WILCOX, DENNIS L.	168277	8-31-70 243	0- 0-	$ .00	023800
081. /WA710	WOODWARD, CHESTER	168735	8-31-70 243	0- 0-	$ .00	023940
096.1 /R742M	ROTHE, EDITH	168238	8-31-70 243	0- 0-	$ .00	023950
110. /US3P	USHENKO, A. P.	169306	8-31-70 243	0- 0-	$ .00	024000
111. /H273E	HASERCT, F. S.	168564	8-31-70 243	0- 0-	$ .00	024050
111.85 /SCH33	SCHILLER, J. C. F	169337	8-31-70 243	0- 0-	$ .00	024078
128. /L874N	LODS, A. W.	169395	8-31-70 243	0- 0-	$ .00	024123
150. /D51E	DEWEY, JOHN	168499	8-31-70 243	0- 0-	$ .00	024225
150. /D51E	DEWEY, JOHN	168500	8-31-70 243	0- 0-	$ .00	024275
150. /F9270	FROMME, ALLAN	168639	8-31-70 243	0- 0-	$ .00	024335
150.18 /ED95E	EDWARDS, ALLEN L.	168361	8-31-70 243	0- 0-	$ .00	024350
150.195/F895Y	WELMAN, B. B.	168789	8-31-70 243	0- 0-	$ .00	024400
150.973/SM151	SHAKOW, DAVID	169122	8-31-70 243	0- 0-	$ .00	024407
155.4 /GR75R	GRIFFITHS, RUTH	174903	9-28-70 271	0- 0-	$ .00	044450
248. /MA91J	MUGGERIDGE, MALCO	174986	9- 7-70 250	0- 0-	$ .00	025475
252.07 /C3680	CHAPPELL, C. G.	174923	8- 3-70 215	0- 0-	$ .00	000240
282. /G613W	GOODIER, ALBAN	174983	9- 7-70 250	0- 0-	$ .00	025525
300.8 /T1578	TANNENBAUM, FRANK	174969	9-14-70 257	0- 0-	$ .00	031746
301.445/T723R	TRENT, J. W.	174997	9-14-70 257	0- 0-	$ .00	032634
309.173/W734V	WINTER, J. A.	174978	9-14-70 257	0- 0-	$ .00	032050
320.949/V972C	VLCINICH, W. S.	174971	9-21-70 264	0- 0-	$ .00	036733
321.02 /WA22		174976	9-21-70 264	0- 0-	$ .00	036600
327.47 /SM53R	SMITH, C. J.	174916	9-28-70 271	0- 0-	$ .00	044790
330.9 /N42W	NEW YORK TIMES	174913	9-28-70 271	0- 0-	$ .00	044428
330.942/T4375	TICTNER, F. W.	174936	8- 3-70 215	0- 0-	$ .00	059925
332.497/F914D	FRIEDMAN, MILTON	174968	9-14-70 257	0- 0-	$ .00	031850
338.176/P825	PORK INDUSTRY	174989	9- 7-70 250	0- 0-	$ .00	026475
338.973/S054P	SOMERS, H. M.	174994	9- 7-70 250	0- 0-	$ .00	026025
342.42 /P946S	PROTHER, G. W.	174990	9- 7-70 250	0- 0-	$ .00	026175
347.99 /W2512		174920	9-28-70 271	0- 0-	$ .00	044710
350. /W147I	WALDO, DWIGHT	174972	9-21-70 264	0- 0-	$ .00	036635
370.196/T214W	TAYLOR, HAROLD	174935	8- 3-70 215	0- 0-	$ .00	059989
370.92 /AL19W	WEST, A. F.	174975	9-14-70 257	0- 0-	$ .00	032125
371.330/N213I	NAT. INF. CENTER	174912	9-28-70 271	0- 0-	$ .00	044450
372.832/C498C	CITIZENSHIP ED.	174962	9-14-70 257	0- 0-	$ .00	032000
377.82 /R449		174982	9- 7-70 250	0- 0-	$ .00	026500
378.155/ST51E	STICKLER, W. H.	174933	8- 3-70 215	0- 0-	$ .00	059265
379.73 /SM62D	SMITH, M. H.	174993	9- 7-70 250	0- 0-	$ .00	026200
380.5 /T6AT		174926	9- 7-70 250	0- 0-	$ .00	025875
396. /G546T	TAYLOR, G. R. S.	174934	8- 3-70 215	0- 0-	$ .00	060100
547.005/F77B	BURNS, ROBERT	112268	9-28-70 271	0- 0-	$ .00	045010
547.005/F77B	BURNS, ROBERT	112274	9-28-70 271	0- 0-	$ .00	045175
547.005/F77B	BURNS, ROBERT	119441	9-28-70 271	0- 0-	$ .00	045225
547.005/F77B	BURNS, ROBERT	128505	9-28-70 271	0- 0-	$ .00	045250
547.005/F77B		147973	9-21-70 264	0- 0-	$ .00	035950
547.005/F77B		165926	9-21-70 264	0- 0-	$ .00	036025
547.005/F77B		159139	9-21-70 264	0- 0-	$ .00	036050
547.005/F77B		173582	9-21-70 264	0- 0-	$ .00	036075
610.69 /P871W	POWER, D'ARCY	174927	8- 3-70 215	0- 0-	$ .00	060135
615.9 /N2132	NRC CCM. ON EFF.	174967	9-14-70 257	0- 0-	$ .00	032414
658.CC1/AM35R	AM. INST. OF I.E.	174961	9-14-70 257	0- 0-	$ .00	032244
658.CC1/W125P	WAGNER, H. M.	174919	8- 3-70 215	0- 0-	$ .00	060065
658.82 /D2560	DARTNELL CORP.	174908	9-28-70 271	0- 0-	$ .00	045035
664. /N877P	NOYES, ROBERT	174914	9-28-70 271	0- 0-	$ .00	044850
701. /B193A	BALLICO, A. B.	174967	9-14-70 257	0- 0-	$ .00	031875
703. /O4A	OLICK, JOHN	174931	9- 7-70 250	0- 0-	$ .00	026325
751.4 /W672N	WILLIAMS, MIRAM	174940	9-21-70 264	0- 0-	$ .00	036663
759.4 /F925Y	FISHER, B. M.	174939	9-14-70 257	0- 0-	$ .00	032625
759.5 /M617Y	MIND, EDGAR	175000	9-14-70 257	0- 0-	$ .00	032450
759.5 /ST31K	STEARNS, F. P.	174932	8- 3-70 215	0- 0-	$ .00	000200
769. /C592H	CLEAVER, JAMES	174966	9-14-70 257	0- 0-	$ .00	031900
780.07 /L985	LYON, G. N.	174937	8- 3-70 215	0- 0-	$ .00	000079
791.24 /W671S	WILLIAMS, C. F.	174977	9-14-70 257	0- 0-	$ .00	032100
792. /P317W	PEARSON, HESKETH	051642	8-10-70 222	0- 0-	$ .00	060060
792. /P42W	PEARY, C. A.	021600	8-10-70 222	0- 0-	$ .00	060150
792. /P673W	LEY-PISCATOR, P.	158206	8-10-70 222	0- 0-	$ .00	153380
792. /A187W	MATHBONE, BASIL	111639	8-10-70 222	0- 0-	$ .00	059325
792. /SF6W	SFLDES, SAMUEL	082756	8-10-70 222	0- 0-	$ .00	059265
792. /S089C	SOUTHERN, MICHAEL	108912	8-10-70 222	0- 0-	$ .00	059182
792. /T279W	TERRY, D. F.	017800	8-10-70 222	0- 0-	$ .00	060267
792.022/D249C	DAVIS, J. M.	037162	8-10-70 222	0- 0-	$ .00	060270
792.023/ST86O	STRINDBERG, A	156295	8-10-70 222	0- 0-	$ .00	060135
792.025/AS59N	ASHWORTH, M.	061956	8-10-70 222	0- 0-	$ .00	060065
792.025/G413I	GILLETTE, A. S.	158400	8-10-70 222	0- 0-	$ .00	000224
792.025/J774S	JOSEPH, STEPHEN	122510	8-10-70 222	0- 0-	$ .00	000200
792.025/K419S	KENTON, WARREN	135818	8-10-70 222	0- 0-	$ .00	059625
793.3 /M582W	BELLMAN, ANATOLE	174922	8- 3-70 215	0- 0-	$ .00	060159

Suggested Solution, Problem D, Printout (continued)

CALL NUMBER	AUTHOR		DUE	RETURNED	FINES	ID NO.
793.3 /SH510	SHERBON, E.	168926	8-10-70 222	0- 0-	$ .00	000605
793.3C7/IN4M	INGRAM, A. G.	168877	8-10-70 222	8-17-70	$ .35	000500
793.34 /SE77Y	SETS IN ORDER	169149	8-10-70 222	0- 0-	$ .00	000255
794.1 /EU89W	EUWE, MACHGIELIS	168562	8-10-70 222	0- 0-	$ .00	000240
796. /SH26S	SHAW, J. H.	174921	8- 3-70 215	0- 0-	$ .00	000157
796.06 /INBP	INT. CONGRESS	174985	9- 7-70 250	0- 0-	$ .00	025625
796.33 /D265F	DAUGHERTY, HUGH	168233	8-10-70 222	0- 0-	$ .00	000159
804. /G695L	GOSSE, E. W.	174984	9- 7-70 250	0- 0-	$ .00	025725
808.8 /KP71T	KUNES, O. D.	174930	8- 3-70 215	0- 0-	$ .00	040287
808.820/AM35S	AMER. LIB. ASS.	041819	8-10-70 222	9-28-70	$ 2.45	000157
808.820/H454T	BERGQUIST, G. W.	111251	8-10-70 222	0- 0-	$ .00	000112
808.83 /AR38S	ARGOSY	075421	10- 5-70 278	0- 0-	$ .00	048400
808.83 /AS69W	ASQUITH, C. P. E.	057537	10- 5-70 278	0- 0-	$ .00	048433
808.83 /H226A	HANC, GENE	116797	10- 5-70 278	0- 0-	$ .00	048875
808.83 /B226C	HARON, J. L.	066577	10- 5-70 278	0- 0-	$ .00	048925
808.83 /B2798	BARROWS, MARJORIE	075310	10- 5-70 278	0- 0-	$ .00	049080
808.83 /B2890	BARZUN, JACQUES	101232	10- 5-70 278	0- 0-	$ .00	049240
808.83 /B575F	BLAIR, T. P. H.	133966	10- 5-70 278	0- 0-	$ .00	049245
808.85 /P941C	PROCHNOW, H. V.	108312	10- 5-70 278	0- 0-	$ .00	049262
808.85 /P941S	PROCHNOW, H. V.	104766	10- 5-70 278	0- 0-	$ .00	049415
808.85 /R431M	RIDDLE, GEORGE	068073	10- 5-70 278	10-18-70	$ .85	049625
808.850/SL87S	SLTTON, ROBERTA	023655	10- 5-70 278	0- 0-	$ .00	049545
808.86 /B7835	BROCKWAY, WALLACE	028927	10- 5-70 278	0- 0-	$ .00	049625
808.86 /G2898	GENTRY, C. G.	040010	10- 5-70 278	0- 0-	$ .00	049675
808.86 /SCH88	SCHUSTER, M. L.	049652	10- 5-70 278	0- 0-	$ .00	049700
808.87 /AL53M	ALLEN, F. F.	040018	10- 5-70 278	10- 7-70	$ .10	049725
808.87 /AL53M	ALLEN, F. F.	040523	10- 5-70 278	0- 0-	$ .00	049750
808.87 /BA26C	BLUMENFELD, GERRY	159415	10- 5-70 278	0- 0-	$ .00	049775
808.87 /BA26T	BLUMENFELD, GERRY	156862	10- 5-70 278	0- 0-	$ .00	049925
808.87 /B782L	BRUCK, H. I.	043868	10- 5-70 278	0- 0-	$ .00	050025
808.87 /C3350	CERF, B. A.	096829	10- 5-70 278	0- 0-	$ .00	050300
809.2 /W154P	WALKLEY, A. B.	174971	9-14-70 257	0- 0-	$ .00	032225
810.4 /EL594	ELLIS, C. P.	174966	9-14-70 257	0- 0-	$ .00	031896
810.9 /V338F	VAN NOSTRAND, A.D	174938	8- 3-70 215	0- 0-	$ .00	000800
811.38_/W59YM	MILLER, E. H.	174911	9-28-70 271	0- 0-	$ .00	044900
820.9 /K287S	KELLETT, E. E.	174924	8- 3-70 215	0- 0-	$ .00	000255
821. /OX2	OXFORD BOOK, 1967	174926	8- 3-70 215	0- 0-	$ .00	000605
821. /YA4P	YOUNG, EDWARD	174979	9-21-70 264	0- 0-	$ .00	034481
821. /YP4P	YOUNG, EDWARD	174980	9-21-70 264	0- 0-	$ .00	036550
821.67 /H93PW	BURNS, ROBERT	174907	9-28-70 271	0- 0-	$ .00	045060
821.83 /B82PR	BROWNING, ROBERT	174906	8- 3-70 215	0- 0-	$ .00	000112
824. /P875E	POWYS, LLEWELYN	174928	8- 3-70 215	0- 0-	$ .00	040270
840.8 /OX2	OXFORD BOOK, 1957	174925	8- 3-70 215	0- 0-	$ .00	000500
840.9 /T345H	THIRAUDET, ALBERT	174995	9- 7-70 250	0- 0-	$ .00	025941
843. /G361F	GIDE, A. P. G.	174774	9-28-70 271	0- 0-	$ .00	044600
843. /G588R	GONCOURT, E.L.A.H	005890	9-21-70 264	0- 0-	$ .00	036450
891.73 /G677I	GOGOL, NIKOLAI	077078	8-24-70 236	0- 0-	$ .00	013543
891.73 /P97CA	PUSHKIN, A. S.	174778	8- 3-70 215	0- 0-	$ .00	018947
891.73 /T58CE	TOLSTOI, L. N.	168470	8-24-70 236	0- 0-	$ .00	013650
891.73 /T58KE	TOLSTOI, L. N.	168480	8-24-70 236	0- 0-	$ .00	013713
891.86 /C171	CAPEK, KAREL	168795	8-24-70 236	0- 0-	$ .00	013719
895.11 /T782C	TS'AI, T'ING-KAN	174998	9- 7-70 250	0- 0-	$ .00	025850
901.9 /AM352	AMER. COUNCIL OF	168804	8-24-70 236	0- 0-	$ .00	013725
901.93 /T729C	TREVOR-ROPER, H.R	174970	9-14-70 257	0- 0-	$ .00	031682
903. /D499G	DE VRIES, LOUIS	061398	8-24-70 236	0- 0-	$ .00	013750
903. /D499G	DE VRIES, LOUIS	091186	8-24-70 236	0- 0-	$ .00	013850
907.2 /SA38H	SALVEMINI, GAETAN	168817	8-24-70 236	9-21-70	$ 1.40	013863
908. /F531P	FISHER, H. A. L.	169167	8-24-70 236	0- 0-	$ .00	013923
909. /H534T	HINKENHEAD, F.F.S	168872	8-24-70 236	0- 0-	$ .00	013950
909. /IN8H	INTERNAT. CORP.	168762	8-24-70 236	0- 0-	$ .00	013975
909.82 /C722T	COLTON, J. C.	169276	8-24-70 236	0- 0-	$ .00	014235
909.82 /N479	NEWSWEEK	052723	8-24-70 236	0- 0-	$ .00	014325
909.82 /N479F	NEWSWEEK	100664	8-24-70 236	0- 0-	$ .00	014350
909.82 /N479T	NEWSWEEK	102451	8-24-70 236	0- 0-	$ .00	014450
909.82 /OR5W	ORLENSKY, SERGE	085182	8-24-70 236	0- 0-	$ .00	014463
909.82 /OV2D	OVERSEAS PRESS C.	041842	8-24-70 236	0- 0-	$ .00	014525
909.82 /OV2F	OVERSEAS PRESS C.	054114	8-24-70 236	0- 0-	$ .00	014575
909.82 /OV2I	OVERSEAS PRESS C.	124515	8-24-70 236	0- 0-	$ .00	014750
909.82 /OV2N	OVERSEAS PRESS C.	046691	8-24-70 236	0- 0-	$ .00	014875
909.82 /PAP	PEAR, VERA P.	104212	8-17-70 229	0- 0-	$ .00	008483
909.82 /PAP	PEAR, VERA P.	104213	8-17-70 229	0- 0-	$ .00	008571
909.82 /P759		059686	8-17-70 229	0- 0-	$ .00	008375
909.82 /R259A	REES, DAVID	149942	8-17-70 229	0- 0-	$ .00	008580
909.82 /SA37A	SALTER, JAMES ART	054026	8-17-70 229	0- 0-	$ .00	008643
909.82 /SCM1A	SCHAPIRO, J. S.	050389	8-17-70 229	0- 0-	$ .00	008750
909.82 /SL2PW	SLESSOR, JOHN C.	105962	8-17-70 229	0- 0-	$ .00	008782
909.82 /SN61J	SNOW, EDGAR	044436	8-17-70 229	0- 0-	$ .00	009012
909.82 /ST4RC	STEVENSON, ADLAI	062170	8-17-70 229	0- 0-	$ .00	009050
909.82 /ST81S	STRACHEY, JOHN	117170	8-17-70 229	0- 0-	$ .00	009075
909.82 /T47L	THOMPSON, DOROTHY	022030	8-17-70 229	0- 0-	$ .00	009450
909.822/E77NS	EDDY-WATSON, M.	095306	8-17-70 229	0- 0-	$ .00	008700
909.824/N213P	NATPL. BROADCAST.	155226	8-17-70 229	0- 0-	$ .00	009415
909.9 /M36C	MARVIN, FRANCIS	013291	8-17-70 229	10- 1-70	$ 2.50	009460
910. /H5196	HALES, RAWSTEN	054552	8-17-70 229	8-18-70	$ .05	009504
910. /H43F2	HENGSTEN, N. A.	033231	8-17-70 229	0- 0-	$ .00	009325
910. /H43F3	HENGSTEN, A. A.	111962	8-17-70 229	0- 0-	$ .00	009585
910. /H6RG	HOWARD, ISAIAH	015849	8-17-70 229	0- 0-	$ .00	009650
910. /H6RG	HOWARD, ISAIAH	035374	8-17-70 229	0- 0-	$ .00	009725
910. /H6RP	HOWARD, ISAIAH	015063	8-17-70 229	0- 0-	$ .00	009675
913.36 /C548M	CLARK, J. G. D.	174965	9-14-70 257	0- 0-	$ .00	031965
914.A9 /ST241	STANISLAWSKI, CAN	174931	8- 3-70 215	0- 0-	$ .00	000182
917.303/ST89I	STACUT, CUSHING	174914	9-28-70 271	0- 0-	$ .00	044765
917.5 /R134L	RAINE, J. K.	174929	8- 3-70 215	0- 0-	$ .00	000625
942. /N944W	NEILSTEIN, W.	174948	9-14-70 257	0- 0-	$ .00	032800
973.713/H641C	HOLAND, C. P.	174942	9-14-70 257	0- 0-	$ .00	032725
979.71 /L515W	WHITE, H. S.	176574	9-14-70 257	0- 0-	$ .00	032150
979.917/A67W0	OSMIEN, P. J.	176915	9-28-70 271	0- 0-	$ .00	044475

TOTAL GENERAL WORKS IN CIRCULATION: 0017
TOTAL PHILOSOPHY IN CIRCULATION: 0011
TOTAL RELIGION IN CIRCULATION: 0001
TOTAL SOCIAL SCIENCES IN CIRCULATION: 0024
TOTAL LANGUAGES IN CIRCULATION: 0000
TOTAL PURE SCIENCES IN CIRCULATION: 0008
TOTAL APPLIED SCIENCES IN CIRCULATION: 0004
TOTAL FINE ARTS IN CIRCULATION: 0010
TOTAL LITERATURE IN CIRCULATION: 0045
TOTAL HISTORY IN CIRCULATION: 0045
TOTAL FICTION IN CIRCULATION: 0015

HUMANITIES ALLOTMENT: $ 62,500.00
SCIENCES ALLOTMENT: $ 17,500.00
CREATIVE ARTS ALLOTMENT: $145,000.00

UNIT V
SERIALS APPLICATIONS

Instructor's Notes:

Information from the visible file is converted to machine readable cards, each title requiring seven cards to complete the record. These cards are then used by the student to write other serials programs. This unit will give the student opportunity to learn some of the procedures required when using the disk drives. Although the first problems do not call for the use of the disk, at least one of the problems in this unit will require it. After the student has been introduced to the disk, he may want to make use of it in as many future problems as possible.

The purpose of this unit is to give the student an opportunity to begin to see and understand the many problems involved in serials automation. Most important to the student will be the procedures necessary to begin to anticipate the many variables which are common to serials work.

The method used will be a continuation of the one used in the previous unit, namely the participation method. Students should be doing work on an individual basis now, and so the instructor will be working with the student's individual problems.

The resources will be the same as for the previous unit with the addition of the data cards containing the serials information in machine readable form.

Class Preparation:

The instructor will have to prepare the data cards for the students to write their programs around. After the students have successfully created their own serials file, the instructor may want to put one of the student's file on tape for use as a HOLDINGS FILE.

Problem A, Serials Holdings

Instructor's Notes:

Using the data cards prepared by the instructor, the student will prepare a program that will read the cards and write them on tape thereby creating a serials holdings file.

Class preparation will include the preparation of the data cards mentioned above, and duplicating the parameters of the problem for class distribution.

Parameters:

Input:

On cards, seven cards per record with the following formats:

Card one:

Cols.	1 - 6	Sequence number
	7 - 8	Card number
	9 - 70	Title-1
	71 - 80	Classification number

Card two:

Cols.	1 - 6	Sequence number
	7 - 8	Card number
	9 - 70	Title-2
	71 - 80	Author number

Card three:

Cols.	1 - 6	Sequence number
	7 - 8	Card number
	9 - 70	Holdings-1
	71 - 80	Filler

Card four:

Cols.	1 - 6	Sequence number
	7 - 8	Card number
	9 - 70	Holdings-2
	71 - 80	Filler

Card five:

Cols.	1 - 6	Sequence number
	7 - 8	Card number
	9 - 10	Filler
	11 - 25	SUBJECT-1
	26 - 40	SUBJECT-2

	41 - 55	SUBJECT-3
	56 - 70	SUBJECT-4
	71 - 80	Filler

Card six:

Cols.	1 - 6	Sequence number
	7 - 8	Card number
	9 - 10	Filler
	11 - 14	Number one
	15 - 32	Location
	33 - 36	Number two
	37 - 41	Source
	42 - 45	Number three
	46 - 53	Status
	54 - 57	Number four
	58 - 70	Language
	71 - 80	Filler

Card seven:

Cols.	1 - 6	Sequence number
	7 - 8	Card number
	9 - 10	Filler
	11 - 14	Number five
	15 - 17	Form
	18 - 21	Number six
	22 - 24	Frequency
	25 - 28	Number seven
	29 - 35	Expiration date
	36 - 39	Number eight
	40 - 57	Fund
	58 - 61	Number nine
	62 - 67	Cost
	68 - 80	Filler

Output:

On tape totaling 416 characters as follows:

Characters	1 - 6	Sequence number
	7 - 68	First part of title
	69 - 78	Dewey classification number
	79 - 140	Second part of title
	141 - 150	Author number
	151 - 212	First part of holdings
	213 - 274	Second part of holdings
	275 - 334	Subjects
	335 - 352	Floor location
	353 - 357	Source of acquisition
	358 - 365	Subscription status

366 - 378	Language
379 - 331	Physical form
382 - 384	Frequency received
385 - 392	Expiration date
393 - 410	Fund paying subscription
411 - 416	Cost of scription

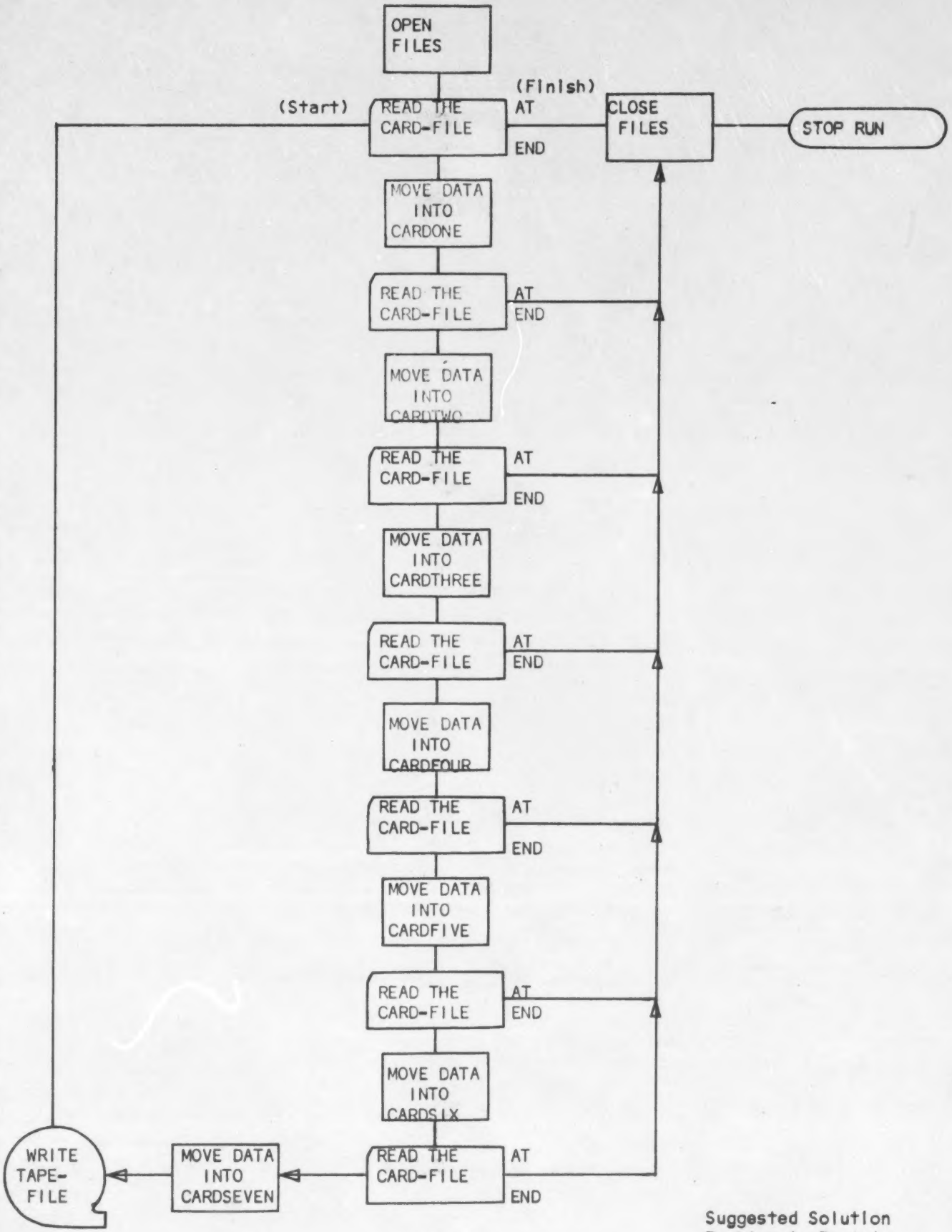
Instructions:

Part I

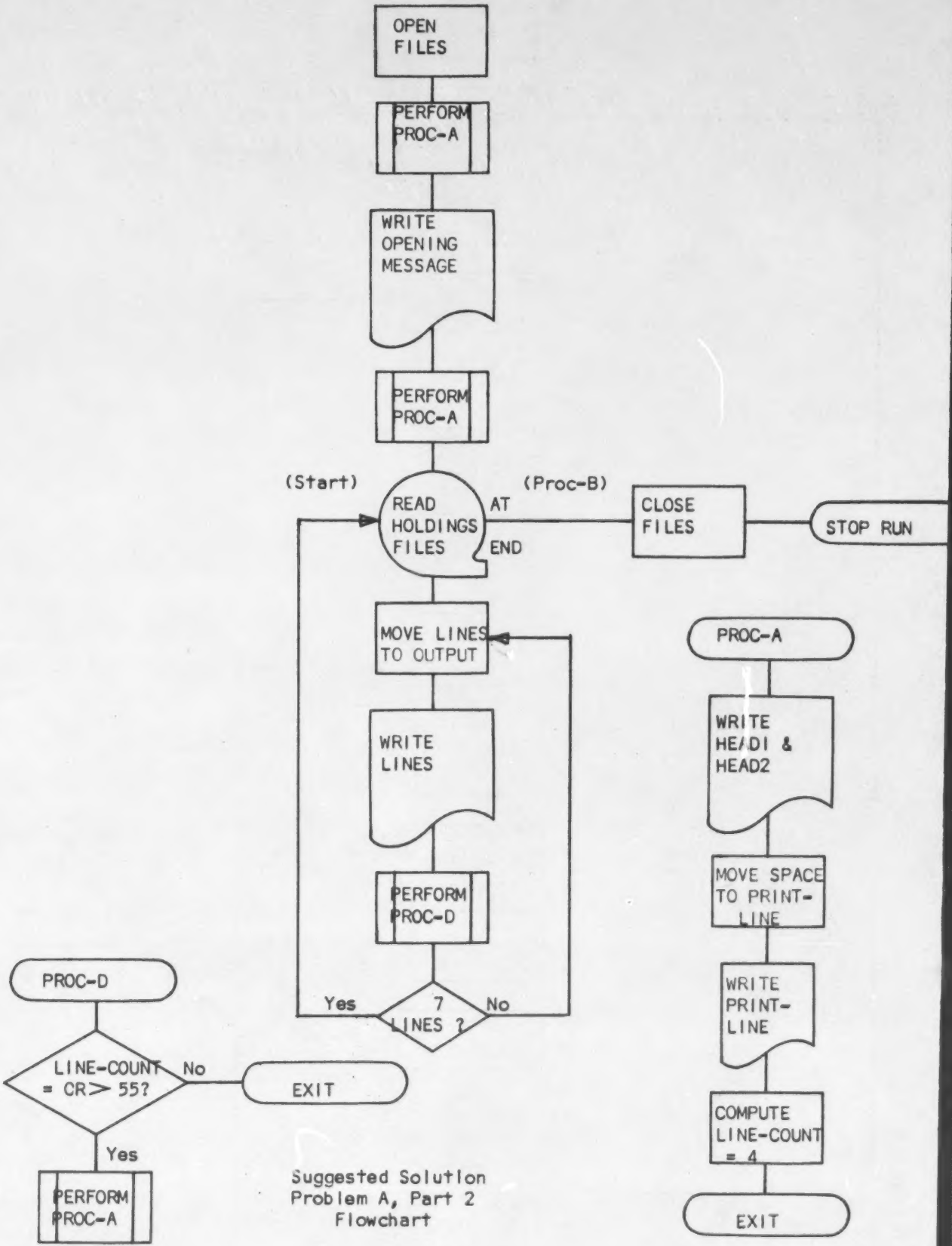
Write a program that reads seven cards per record and prepares a tape file of all serials by sequence number.

Part II

Write a program that reads the tape prepared in Part I and outputs the tape on the printer in a format designed by you. Include at the beginning a sheet upon which all codes and format used are explained.



Suggested Solution
Problem A, Part I
Flowchart



Suggested Solution
Problem A, Part 2
Flowchart

Suggested Solution, Problem A, Part I, Program

```
LINE NO.  SEQ. NO.        SOURCE STATEMENT                              COBOL CL3-7 12/20/70

      1   CC1C5C IDENTIFICATION DIVISION.
      2   CC11CC PROGRAM-ID. 'SERIAL'.
      3   CC115C AUTHOR. S A CYSON
      4   CC12CC INSTALLATION. RENSSELAER POLYTECHNIC INSTITUTE.
      5   CC125C DATE-WRITTEN. FEBRUARY 29, 1970.
      6   CC13CC DATE-COMPILED. MARCH 2, 1970.
      7   CC135C REMARKS.  PRESCOTT LIBRARY'S SERIALS AUTOMATION PROGRAM.
      8   CC14CC ENVIRONMENT DIVISION.
      9   CC145C CONFIGURATION SECTION.
     10   CC15CC SOURCE-COMPUTER. IBM-360.
     11   CC155C OBJECT-COMPUTER. IBM-360.
     12   CC16CC INPUT-OUTPUT SECTION.
     13   CC165C FILE-CONTROL.
     14   CC17CC     SELECT SERIALS-FILE
     15   CC175C     ASSIGN TO 'SYSC12' UNIT-RECORD 2540R.
     16   CC18CC     SELECT HOLDINGS-FILE, ASSIGN TO 'SYS015' UTILITY 2400 UNIT.
     17   CC2CCC DATA DIVISION.
     18   CC2C5C FILE SECTION.
     19   CC21CC FD  SERIALS-FILE RECORDING MODE IS F, RECORD CONTAINS 80
     20   CC215C     CHARACTERS, LABEL RECORDS ARE OMITTED, DATA RECORDS ARE
     21   CC22CC     A-CARD.
     22   CC23CC 01  A-CARD                      PICTURE X(80).
     23   CC24CC FD  HOLDINGS-FILE RECORDING MODE IS F, RECORD CONTAINS 416
     24   CC245C     CHARACTERS, BLOCK CONTAINS 8 RECORDS, LABEL RECORDS ARE
     25   CC25CC     STANDARD, DATA RECORDS ARE HOLDINGS-RECORD.
     26   CC255C 01  HOLDINGS-RECORD     PICTURE X(416).
     27   CC3CCC WORKING-STORAGE SECTION.
     28   CC34CC 01  CARDONE.
     29   CC345C     02  SEG-NO                 PICTURE 9(6)        VALUE ZERO.
     30   CC35CC     02  CARD-NO                PICTURE 99          VALUE ZERO.
     31   CC355C     02  TITLE-A                PICTURE X(62)       VALUE SPACE.
     32   CC36CC     02  CLASS-NO               PICTURE X(10)       VALUE SPACE.
     33   CC365C 01  CARDTWO.
     34   CC37CC     02  SEG-NO                 PICTURE 9(6)        VALUE ZERO.
     35   CC375C     02  CARD-NO                PICTURE 99          VALUE ZERO.
     36   CC380C     02  TITLE-B                PICTURE X(62)       VALUE SPACE.
     37   CC385C     02  ALTH-NO                PICTURE X(10)       VALUE SPACE.
     38   CC39CC 01  CARDTHREE.
     39   CC395C     02  SEG-NO                 PICTURE 9(6)        VALUE ZERO.
     40   CC04CC     02  CARD-NO                PICTURE 99          VALUE ZERO.
     41   CC41CC     02  HOLDINGS-A             PICTURE X(62)       VALUE SPACE.
     42   CC415C     02  FILLER                 PICTURE X(10)       VALUE SPACE.
     43   CC42CC 01  CARDFOUR.
     44   CC425C     02  SEG-NO                 PICTURE 9(6)        VALUE ZERO.
     45   CC43CC     02  CARD-NO                PICTURE 99          VALUE ZERO.
     46   CC44CC     02  HOLDINGS-B             PICTURE X(62)       VALUE SPACE.
     47   CC445C     02  FILLER                 PICTURE X(10)       VALUE SPACE.
     48   CC45CC 01  CARDFIVE.
     49   CC455C     02  SEG-NO                 PICTURE 9(6)        VALUE ZERO.
     50   CC46CC     02  CARD-NO                PICTURE 99          VALUE ZERO.
     51   CC465C     02  FILLER                 PICTURE XX          VALUE SPACE.
     52   CC47CC     02  SUBJECTS.
     53   CC475C         03  SUB-A              PICTURE A(15)       VALUE SPACE.
     54   CC48CC         03  SUB-B              PICTURE A(15)       VALUE SPACE.
     55   CC485C         03  SUB-C              PICTURE A(15)       VALUE SPACE.
     56   CC49CC         03  SUB-D              PICTURE A(15)       VALUE SPACE.
     57   CC495C     02  FILLER                 PICTURE X(10)       VALUE SPACE.
     58   CC5CCC 01  CARDSIX.
     59   CC5C5C     02  SEG-NO                 PICTURE 9(6)        VALUE ZERO.
     60   CC51CC     02  CARD-NO                PICTURE 99          VALUE ZERO.
     61   CC51>C     02  FILLER                 PICTURE XX          VALUE SPACE.
     62   CC52CC     02  ONE                    PICTURE X(4)        VALUE '(1) '.
     63   CC525C     02  LOCATION               PICTURE X(18)       VALUE SPACE.
     64   CC53CC     02  TWO                    PICTURE X(4)        VALUE '(2) '.
     65   CC535C     02  SOURCE                 PICTURE A(5)        VALUE SPACE.
     66   CC54CC     02  THREE                  PICTURE X(4)        VALUE '(3) '.
     67   CC545C     02  STATUS                 PICTURE A(8)        VALUE SPACE.
     68   CC55CC     02  FOUR                   PICTURE X(4)        VALUE '(4) '.
     69   CC555C     02  LANGUAGE               PICTURE A(13)       VALUE SPACE.
     70   CC56CC     02  FILLER                 PICTURE X(10)       VALUE SPACE.
     71   CC565C 01  CARDSEVEN.
     72   CC57CC     02  SEG-NO                 PICTURE 9(6)        VALUE ZERO.
     73   CC575C     02  CARD-NO                PICTURE 99          VALUE ZERO.
     74   CC58CC     02  FILLER                 PICTURE XX          VALUE SPACE.
     75   CC585C     02  FIVE                   PICTURE X(4)        VALUE '(5) '.
     76   CC59CC     02  FORM                   PICTURE A(3)        VALUE SPACE.
     77   CC595C     02  SIX                    PICTURE X(4)        VALUE '(6) '.
     78   CC6CCC     02  FREQUENCY              PICTURE A(3)        VALUE SPACE.
     79   CC6C5C     02  SEVEN                  PICTURE X(4)        VALUE '(7) '.
     80   CC61CC     02  EXP-DATE               PICTURE X(7)        VALUE SPACE.
     81   CC615C     02  EIGHT                  PICTURE X(4)        VALUE '(8) '.
     82   CC62CC     02  FUND                   PICTURE A(18)       VALUE SPACE.
     83   CC625C     02  NINE                   PICTURE X(4)        VALUE '(9) '.
     84   CC63CC     02  COST                   PICTURE 9999V99.
     85   CC635C     02  FILLER                 PICTURE X(13)       VALUE SPACE.
     86   CC765C 01  HOLD-REC.
     87   CC766C     02  A-SEG-NO          PICTURE 9(6).
     88   CC767C     02  CALL-NO.
     89   CC768C         03  D-CLASS-NO    PICTURE X(10).
     90   CC769C         03  AUTHOR-NO     PICTURE X(10).
     91   CC77CC     02  TITLE.
     92   CC771C         03  FIRST         PICTURE X(62).
     93   CC772C         03  SECOND        PICTURE X(62).
     94   CC773C     02  HOLDINGS.
     95   CC774C         03  PART1         PICTURE X(62).
     96   CC775C         03  PART2         PICTURE X(62).
     97   CC776C     02  SUBJECTS.
     98   CC777C         03  A-SUB         PICTURE A(15).
     99   CC778C         03  B-SUB         PICTURE A(15).
    100   CC779C         03  C-SUB         PICTURE A(15).
    101   CC78CC         03  D-SUB         PICTURE A(15).
    102   CC781C     02  RECEP-LOCATION     PICTURE X(18).
    103   CC782C     02  ACC-SOURCE         PICTURE A(5).
    104   CC783C     02  SUBS-STATUS        PICTURE A(8).
    105   CC784C     02  LANGUAGES          PICTURE A(13).
    106   CC785C     02  PHYS-FORM          PICTURE AAA.
    107   CC786C     02  FREQ-RECD          PICTURE AAA.
    108   CC787C     02  EXPIRE-DATE        PICTURE X(8).
    109   CC788C     02  PAY-FUND           PICTURE X(18).
    110   CC789C     02  SUBSCRIPT-COST     PICTURE 9999V99.
    111   C1CC5C PROCEDURE DIVISION.
    112   C11CCC     OPEN INPUT SERIALS-FILE, OUTPUT HOLDINGS-FILE.
```

Suggested Solution, Problem A, Part I,, Program (continued)

```
LINE NO.  SEQ. NO.        SOURCE STATEMENT

  113     C1245C START. READ SERIALS-FILE INTO CARDONE AT END GO TO PROC-B.
  114     C1255C      MOVE SEC-NO OF CARDONE TO A-SEC-NO.
  115     C126CC      MOVE TITLE-A TO FIRST.
  116     C1265C      MOVE CLASS-NO TO D-CLASS-NO.
  117     C127CC      READ SERIALS-FILE INTO CARDTWO AT END GO TO PROC-B.
  118     C1285C      MOVE TITLE-B TO SECOND.
  119     C129CC      MOVE AUTHOR-NO TO AUTHOR-NO.
  120     C13CCC      READ SERIALS-FILE INTO CARDTHREE AT END GO TO PROC-B.
  121     C13C5C      MOVE HOLDINGS-A TO PART1.
  122     C1315C      READ SERIALS-FILE INTO CARDFOUR AT END GO TO PROC-B.
  123     C132CC      MOVE HOLDINGS-B TO PART2.
  124     C133CC      READ SERIALS-FILE INTO CARDFIVE AT END GO TO PROC-B.
  125     C1335C      MOVE SUB-A TO A-SUB.
  126     C134CC      MOVE SUB-B TO B-SUB.
  127     C1345C      MOVE SUB-C TO C-SUB.
  128     C135CC      MOVE SUB-D TO D-SUB.
  129     C136CC      READ SERIALS-FILE INTO CARDSIX AT END GO TO PROC-B.
  130     C1365C      MOVE LOCATION TO FLOOR-LOCATION.
  131     C137CC      MOVE SOURCE TO ACQ-SOURCE.
  132     C1375C      MOVE STATUS TO SUBS-STATUS.
  133     C138CC      MOVE LANGUAGE TO LANGUAGES.
  134     C1385C      READ SERIALS-FILE INTO CARDSEVEN AT END GO TO PROC-B.
  135     C139CC      MOVE FORM TO PHYS-FORM.
  136     C14CCC      MOVE FREQUENCY TO FREQ-RECD.
  137     C14C5C      MOVE EXP-DATE TO EXPIRE-DATE.
  138     C141CC      MOVE FUNC TO PAY-FUNC.
  139     C1415C      MOVE COST TO SUBSCRIPT-COST.
  140     C14155      WRITE HOLDINGS-RECORD FROM HOLD-REC.
  141     C1425C      GO TO START.
  142     C145CC PROC-B. CLOSE SERIALS-FILE, HOLDINGS-FILE.
  143     C1455C      STOP RUN.
```

Suggested Solution, Problem A, Part 2, Program

```
LINE NO.  SEQ. NO.        SOURCE STATEMENT                              COBOL CL3-7 12/21/70

    1     001010 IDENTIFICATION DIVISION.
    2     001020 PROGRAM-ID. 'SERIALS'.
    3     001030 AUTHOR. SAG.
    4     001040 REMARKS. SUGGESTED SOLUTION TO UNIT V, PROBLEM A.
    5     001050 ENVIRONMENT DIVISION.
    6     001060 CONFIGURATION SECTION.
    7     001070 SOURCE-COMPUTER. IBM-360.
    8     001080 OBJECT-COMPUTER. IBM-360.
    9     001090 INPUT-OUTPUT SECTION.
   10     001100 FILE-CONTROL.
   11     001120     SELECT HOLDINGS-FILE ASSIGN TO 'SYS015' UTILITY 2400 UNIT.
   12     001130     SELECT PRINT-FILE ASSIGN TO 'SYS014' UNIT-RECORD 1403.
   13     001140 DATA DIVISION.
   14     001160 FILE SECTION.
   15     001165 FD  HOLDINGS-FILE RECORDING MODE IS F, RECORD CONTAINS 416
   16     002010     CHARACTERS, BLOCK CONTAINS 8 RECORDS, LABEL RECORDS ARE
   17     002020     STANDARD, DATA RECORD IS HOLD-REC.
   18     002030 01  HOLD-REC.
   19     002040     02  A-SEC-NO          PICTURE 9(6).
   20     002050     02  CALL-NO.
   21     002060         03  D-CLASS-NO    PICTURE X(10).
   22     002070         03  ALTHOR-NO     PICTURE X(10).
   23     002080     02  TITLE.
   24     002090         03  FIRST         PICTURE X(62).
   25     002100         03  SECOND        PICTURE X(62).
   26     002110     02  HOLDINGS.
   27     002120         03  PART1         PICTURE X(62).
   28     002130         03  PART2         PICTURE X(62).
   29     002140     02  SUBJECTS.
   30     002150         03  A-SUB         PICTURE A(15).
   31     002160         03  B-SUB         PICTURE A(15).
   32     002170         03  C-SUB         PICTURE A(15).
   33     002180         03  D-SUB         PICTURE A(15).
   34     002190     02  FLOOR-LOCATION    PICTURE X(18).
   35     002200     02  ACC-SOURCE        PICTURE A(5).
   36     002210     02  SUBS-STATUS       PICTURE A(8).
   37     002220     02  LANGUAGES         PICTURE A(13).
   38     002230     02  PHYS-FORM         PICTURE AAA.
   39     002240     02  FREQ-RECD         PICTURE AAA.
   40     002250     02  EXPIRE-DATE       PICTURE X(8).
   41     002260     02  PAY-FLAG          PICTURE X(18).
   42     002270     02  SUBSCRIPT-COST    PICTURE 9999V99.
   43     002280 FD  PRINT-FILE RECORDING MODE IS F, RECORD CONTAINS 133
   44     002290     CHARACTERS, LABEL RECORDS ARE OMITTED, DATA RECORD IS
   45     002300     PRINT-LINE.
   46     002310 01  PRINT-LINE            PICTURE X(133).
   47     002320 WORKING-STORAGE SECTION.
   48     002350 77  LINE-COUNT                PICTURE 99          VALUE ZERO.
   49     002520 01  HEAD1.
   50     002530     02  FILLER                 PICTURE X(47)      VALUE SPACE.
   51     002540     02  LIB-NAME              PICTURE A(16)       VALUE 'PRESCOTT L
   52     002550-    'IBRARY'.
   53     002560     02  FILLER                PICTURE X(69)       VALUE SPACE.
   54     002570 01  HEAD2.
   55     002580     02  FILLER                PICTURE X(43)       VALUE SPACE.
   56     002590     02  TITLE-LIST            PICTURE A(24)       VALUE 'PERIODICAL
   57     002600     ' HOLDINGS LIST'.
   58     002610     02  FILLER                PICTURE X(65)       VALUE SPACE.
   59     002620 01  L1.
   60     002630     02  SEN-1                 PICTURE A(51)       VALUE '  FORMAT F
   61     002640-    'OR EACH ENTRY IN THIS LIST IS AS FOLLOWS:'.
   62     002650     02  FILLER                PICTURE X(82)       VALUE SPACE.
   63     002660 01  L2.
   64     002670     02  FILLER                PICTURE X(2)        VALUE SPACE.
   65     002680     02  SEN-2                 PICTURE A(91)       VALUE 'FIRST LINE
   66     002690-    '  :  ALPHA SEQUENCE NUMBER, FIRST HALF OF TITLE, CLASSIFICA
   67     002695-    'TION NUMBER, IF ANY.'.
   68     002700     02  FILLER                PICTURE X(39)       VALUE SPACE.
   69     002710 01  L3.
   70     002720     02  FILLER                PICTURE X(2)        VALUE SPACE.
   71     002730     02  SEN-3                 PICTURE A(90)       VALUE 'SECOND LIN
   72     002740-    'E  :  SECOND HALF OF TITLE, IF NECESSARY; AUTHOR NUMBER (IF
   73     002750-    'ANY).  'THIS LINE MAY'.
   74     002760     02  FILLER                PICTURE X(40)       VALUE SPACE.
   75     002770 01  L4.
   76     002780     02  FILLER                PICTURE X(23)       VALUE SPACE.
   77     002790     02  SEN-4                 PICTURE A(9)        VALUE 'BE BLANK)'
   78     002800-    .
   79     002810     02  FILLER                PICTURE X(100)      VALUE SPACE.
   80     002820 01  L5.
   81     002830     02  FILLER                PICTURE X(2)        VALUE SPACE.
   82     002840     02  SEN-5                 PICTURE A(49)       VALUE 'THIRD LINE
   83     002850-    '  :  FIRST HALF OF HOLDINGS STATEMENT.'.
   84     002860     02  FILLER                PICTURE X(81)       VALUE SPACE.
   85     002870 01  L6.
   86     002880     02  FILLER                PICTURE X(2)        VALUE SPACE.
   87     002890     02  SEN-6                 PICTURE A(90)       VALUE 'FOURTH LIN
   88     002900-    'E  :  SECOND HALF OF HOLDINGS STATEMENT, IF NECESSARY.  (THI
   89     002910-    'S LINE MAY BE BLANK)'.
   90     002920     02  FILLER                PICTURE X(40)       VALUE SPACE.
   91     002930 01  L7.
   92     002940     02  FILLER                PICTURE X(4)        VALUE SPACE.
   93     002950     02  SEN-7                 PICTURE X(78)       VALUE '(NOTE:  AT
   94     002960-    ' LEAST ONE BLANK LINE SEPARATES LINES 4 & 5, TWO IF LINE 4 I
   95     002970-    'S BLANK)'.
   96     002980     02  FILLER                PICTURE X(50)       VALUE SPACE.
   97     002990 01  L8.
   98     003000     02  FILLER                PICTURE X(2)        VALUE SPACE.
   99     003010     02  SEN-8                 PICTURE A(72)       VALUE 'FIFTH LINE
  100     003020-    '  :  SUBJECTS TREATED IN THE MAGAZINE, DETERMINED AS FOLLOW
  101     003040-    'S:'.
  102     003050     02  FILLER                PICTURE X(58)       VALUE SPACE.
  103     003060 01  L9.
  104     003070     02  FILLER                PICTURE X(18)       VALUE SPACE.
  105     003080     02  SEN-9                 PICTURE A(77)       VALUE 'FIRST LIST
  106     003090-    'ED, SUBJECT REFLECTED BY SCHOOL OR DEPARTMENT PAYING FOR THE
  107     003100-    ' TITLE.'.
  108     003110     02  FILLER                PICTURE X(37)       VALUE SPACE.
  109     003120 01  L10.
  110     003130     02  FILLER                PICTURE X(18)       VALUE SPACE.
  111     003140     02  SEN-10                PICTURE A(64)       VALUE 'SECOND LIS
  112     003150-    'TED, SUBJECT REFLECTED BY MAJOR INTEREST OF ITS TITLE.'.
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Suggested Solution, Problem A, Part 2, Program (continued)

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LINE NO. SEG. NO.          SOURCE STATEMENT

   113   000C1C     02  FILLER                 PICTURE X(50)       VALUE SPACE.
   114   000C2C 01  L11.
   115   000C3C     02  FILLER                 PICTURE X(18)       VALUE SPACE.
   116   000C4C     02  SEA-11                 PICTURE A(67)       VALUE 'THIRD LIST
   117   000C5C-    'ED, SUBJECT REFLECTED BY SECONDARY INTEREST OF ITS TITLE.'.
   118   000C6C     02  FILLER                 PICTURE X(47)       VALUE SPACE.
   119   000C7C 01  L12.
   120   000C8C     02  FILLER                 PICTURE X(18)       VALUE SPACE.
   121   000C9C     02  SEA-12                 PICTURE A(81)       VALUE 'FOURTH LIS
   122   000CCC-    'TED, SUBJECT REFLECTED BY OTHER POSSIBLE USERS OF THE JOURNA
   123   000D1C-    'L (IF ANY).'.
   124   000D2C     02  FILLER                 PICTURE X(34)       VALUE SPACE.
   125   000D3C 01  L13.
   126   000D4C     02  FILLER                 PICTURE X(2)        VALUE SPACE.
   127   000D5C     02  SEA-13                 PICTURE X(75)       VALUE 'SIXTH LINE
   128   000D6C-    '   :  (1) PLACE OR AREA IN THE LIBRARY WHERE THE TITLE IS ST
   129   000D7C-    'ORED.'.
   130   000D8C     02  FILLER                 PICTURE X(55)       VALUE SPACE.
   131   000D9C 01  L14.
   132   000DACC    02  FILLER                 PICTURE X(18)       VALUE SPACE.
   133   000DB1C    02  SEA-14                 PICTURE X(60)       VALUE '(2) SOURCE
   134   000DC2C-    ' FROM WHICH THE LIBRARY ACQUIRES THE TITLE, CODED.'.
   135   000D23C    02  FILLER                 PICTURE X(54)       VALUE SPACE.
   136   000D24C 01  L15.
   137   000D25C    02  FILLER                 PICTURE X(18)       VALUE SPACE.
   138   000C1C     02  SEA-15                 PICTURE X(24)       VALUE '(3) STATUS
   139   000C2C-    ' OF THE TITLE:'.
   140   000C3C     02  FILLER                 PICTURE X(90)       VALUE SPACE.
   141   000C4C 01  L16.
   142   000C5C     02  FILLER                 PICTURE X(26)       VALUE SPACE.
   143   000C6C     02  SEA-16                 PICTURE A(58)       VALUE '"CURRENT"
   144   000C7C-    'MEANS THE TITLE IS CURRENTLY UNDER SUBSCRIPTION.'.
   145   000C8C     02  FILLER                 PICTURE X(48)       VALUE SPACE.
   146   000C9C 01  L17.
   147   000C1C     02  FILLER                 PICTURE X(26)       VALUE SPACE.
   148   000C11C    02  SEA-17                 PICTURE A(67)       VALUE '"CROPPED"
   149   000C12C-    'MEANS THE TITLE ONCE WAS BUT NO LONGER IS BEING ACQUIRED.'.
   150   000C13C    02  FILLER                 PICTURE X(39)       VALUE SPACE.
   151   000C15C 01  L18.
   152   000C155    02  FILLER                 PICTURE X(26)       VALUE SPACE.
   153   000C16C    02  SEA-18                 PICTURE A(55)       VALUE '"CEASED" M
   154   000C17C-    'EANS THE TITLE IS NO LONGER BEING PUBLISHED.'.
   155   000C18C    02  FILLER                 PICTURE X(51)       VALUE SPACE.
   156   000C19C 01  L19.
   157   000C2CC    02  FILLER                 PICTURE X(18)       VALUE SPACE.
   158   000C21C    02  SEA-19                 PICTURE X(49)       VALUE '(4) LANGUA
   159   000C22C-    'GE IN WHICH THE TITLE IS BEING PRINTED.'.
   160   000C23C    02  FILLER                 PICTURE X(65)       VALUE SPACE.
   161   000C24C 01  L20.
   162   000C25C    02  FILLER                 PICTURE X(18)       VALUE SPACE.
   163   000C1C     02  SEA-20                 PICTURE X(47)       VALUE '(5) FORM I
   164   000C2C-    'N WHICH THE TITLE IS RECEIVED, CODED.'.
   165   000C3C     02  FILLER                 PICTURE X(67)       VALUE SPACE.
   166   000C4C 01  L21.
   167   000C5C     02  FILLER                 PICTURE X(2)        VALUE SPACE.
   168   000C6C     02  SEA-21                 PICTURE X(84)       VALUE 'SEVENTH LI
   169   000C7C-    'NE :  (6) FREQUENCY WITH WHICH ISSUES SHOULD ARRIVE IN THE L
   170   000C8C-    'IBRARY, CODED.'.
   171   000C9C     02  FILLER                 PICTURE X(46)       VALUE SPACE.
   172   000C1CC 01  L22.
   173   000C11C    02  FILLER                 PICTURE X(18)       VALUE SPACE.
   174   000C12C    02  SEA-22                 PICTURE X(45)       VALUE '(7) DATE L
   175   000C13C-    'AST WHICH THE SUBSCRIPTION EXPIRES.'.
   176   000C14C    02  FILLER                 PICTURE X(69)       VALUE SPACE.
   177   000C15C 01  L23.
   178   000C16C    02  FILLER                 PICTURE X(18)       VALUE SPACE.
   179   000C17C    02  SEA-23                 PICTURE X(45)       VALUE '(8) FUND F
   180   000C18C-    'ROM WHICH THE SUBSCRIPTION IS PAID.'.
   181   000C19C    02  FILLER                 PICTURE X(69)       VALUE SPACE.
   182   000C2CC 01  L24.
   183   000C21C    02  FILLER                 PICTURE X(18)       VALUE SPACE.
   184   000C22C    02  SEA-24                 PICTURE X(36)       VALUE '(9) ANNUAL
   185   000C23C-    ' COST OF THE SUBSCRIPTION.'.
   186   000C24C    02  FILLER                 PICTURE X(78)       VALUE SPACE.
   187   000C31C 01  LINE-1.
   188   000C315    02  FILLER                 PICTURE XXXX        VALUE SPACE.
   189   000C32C    02  SEQUENCE-NUMBER            PICTURE 9(6)    VALUE ZERO.
   190   000C33C    02  FILLER                     PICTURE XXX     VALUE SPACE.
   191   000C34C    02  TITLE-ONE                  PICTURE X(80)   VALUE SPACE.
   192   000C35C    02  CLASSIFICATION-NUMBER      PICTURE X(39)   VALUE SPACE.
   193   000C36C 01  LINE-2.
   194   000C37C    02  FILLER                     PICTURE X(16)   VALUE SPACE.
   195   000C38C    02  TITLE-TWO                  PICTURE X(78)   VALUE SPACE.
   196   000C39C    02  AUTHOR-NUMBER              PICTURE X(38)   VALUE SPACE.
   197   000C4CC 01  LINE-3.
   198   000C41C    02  FILLER                     PICTURE X(16)   VALUE SPACE.
   199   000C42C    02  HOLDINGS-ONE               PICTURE X(116)  VALUE SPACE.
   200   000C43C 01  LINE-4.
   201   000C44C    02  FILLER                     PICTURE X(16)   VALUE SPACE.
   202   000C45C    02  HOLDINGS-TWO               PICTURE X(116)  VALUE SPACE.
   203   000C46C 01  LINE-5.
   204   000C47C    02  FILLER                     PICTURE X(16)   VALUE SPACE.
   205   000C48C    02  SUBJECT.
   206   000C49C        03  SUBJECT-ONE            PICTURE X(19)   VALUE SPACE.
   207   000C5CC        03  SUBJECT-TWO            PICTURE X(19)   VALUE SPACE.
   208   000C51C        03  SUBJECT-THREE          PICTURE X(19)   VALUE SPACE.
   209   000C52C        03  SUBJECT-FOUR           PICTURE X(59)   VALUE SPACE.
   210   000C53C 01  LINE-6.
   211   000C54C    02  FILLER                     PICTURE X(16)   VALUE SPACE.
   212   000C55C    02  NUMBER-ONE                 PICTURE XXXX    VALUE '(1) '.
   213   000C61C    02  LOCATION-FLOOR             PICTURE X(20)   VALUE SPACE.
   214   000C62C    02  NUMBER-TWO                 PICTURE XXXX    VALUE '(2) '.
   215   000C63C    02  ACQUISITION-SOURCE         PICTURE A(6)    VALUE SPACE.
   216   000C64C    02  NUMBER-THREE               PICTURE XXXX    VALUE '(3) '.
   217   000C65C    02  STATUS-SUBS                PICTURE A(9)    VALUE SPACE.
   218   000C66C    02  NUMBER-FOUR                PICTURE XXXX    VALUE '(4) '.
   219   000C67C    02  LANGUAGE                   PICTURE A(14)   VALUE SPACE.
   220   000C68C    02  NUMBER-FIVE                PICTURE XXXX    VALUE '(5) '.
   221   000C69C    02  FORM                       PICTURE A(47)   VALUE SPACE.
   222   000C7CC 01  LINE-7.
   223   000C71C    02  FILLER                     PICTURE X(16)   VALUE SPACE.
   224   000C72C    02  NUMBER-SIX                 PICTURE XXXX    VALUE '(6) '.
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Suggested Solution, Problem A, Part 2, Program (continued)

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LINE NO.  SEQ. NO.          SOURCE STATEMENT

  225     C1C73C      02  FREQUENCY                PICTURE AAAA    VALUE SPACE.
  226     C1C74C      02  ALPHEN-SEVEN             PICTURE XXXX    VALUE '(7) '.
  227     C1C75C      02  DATE-EXPIRES             PICTURE X(8)    VALUE SPACE.
  228     C1C76C      02  ALPHEN-EIGHT             PICTURE XXXX    VALUE '(8) '.
  229     C1C77C      02  FLAG                     PICTURE X(20)   VALUE SPACE.
  230     C1C78C      02  ALPHEN-NINE              PICTURE XXXX    VALUE '(9) '.
  231     C1C79C      02  COST                     PICTURE $Z,ZZ9.99.
  232     C1C81C      02  FILLER                   PICTURE X(59)   VALUE SPACE.
  233     C11C1C PROCEDURE DIVISION.
  234     C11C2C      OPEN INPUT MCLCIAGS-FILE, OUTPUT PRINT-FILE.
  235     C11C3C      PERFORM PROC-A.
  236     C11C4C      WRITE PRINT-LINE FROM L1 AFTER ADVANCING 3 LINES.
  237     C11C5C      WRITE PRINT-LINE FROM L2 AFTER ADVANCING 2 LINES.
  238     C11C6C      WRITE PRINT-LINE FROM L3 AFTER ADVANCING 2 LINES.
  239     C11C7C      WRITE PRINT-LINE FROM L4 AFTER ADVANCING 1 LINES.
  240     C11C8C      WRITE PRINT-LINE FROM L5 AFTER ADVANCING 2 LINES.
  241     C11C9C      WRITE PRINT-LINE FROM L6 AFTER ADVANCING 2 LINES.
  242     C11ICC      WRITE PRINT-LINE FROM L7 AFTER ADVANCING 2 LINES.
  243     C1111C      WRITE PRINT-LINE FROM L8 AFTER ADVANCING 2 LINES.
  244     C1112C      WRITE PRINT-LINE FROM L9 AFTER ADVANCING 2 LINES.
  245     C1113C      WRITE PRINT-LINE FROM L10 AFTER ADVANCING 2 LINES.
  246     C1114C      WRITE PRINT-LINE FROM L11 AFTER ADVANCING 2 LINES.
  247     C1115C      WRITE PRINT-LINE FROM L12 AFTER ADVANCING 2 LINES.
  248     C1116C      WRITE PRINT-LINE FROM L13 AFTER ADVANCING 2 LINES.
  249     C1117C      WRITE PRINT-LINE FROM L14 AFTER ADVANCING 2 LINES.
  250     C1118C      WRITE PRINT-LINE FROM L15 AFTER ADVANCING 2 LINES.
  251     C1119C      WRITE PRINT-LINE FROM L16 AFTER ADVANCING 2 LINES.
  252     C112CC      WRITE PRINT-LINE FROM L17 AFTER ADVANCING 2 LINES.
  253     C1121C      WRITE PRINT-LINE FROM L18 AFTER ADVANCING 2 LINES.
  254     C1122C      WRITE PRINT-LINE FROM L19 AFTER ADVANCING 2 LINES.
  255     C1123C      WRITE PRINT-LINE FROM L20 AFTER ADVANCING 2 LINES.
  256     C1124C      WRITE PRINT-LINE FROM L21 AFTER ADVANCING 2 LINES.
  257     C1125C      WRITE PRINT-LINE FROM L22 AFTER ADVANCING 2 LINES.
  258     C12C1C      WRITE PRINT-LINE FROM L23 AFTER ADVANCING 2 LINES.
  259     C12C2C      WRITE PRINT-LINE FROM L24 AFTER ADVANCING 2 LINES.
  260     C12C3C      PERFORM PROC-A.
  261     C12C4C START. READ MCLCIAGS-FILE AT END GO TO PROC-B.
  262     C12C5C      MOVE A-SEG-NO TO SEQUENCE-NUMBER.
  263     C12C6C      MOVE FIRST TO TITLE-ONE.
  264     C12C7C      MOVE B-CLASS-NO TO CLASSIFICATION-NUMBER.
  265     C12C8C      MOVE SPACES TO PRINT-LINE.
  266     C12C9C      WRITE PRINT-LINE FROM LINE-1 AFTER ADVANCING 2 LINES.
  267     C12CAC      PERFORM PROC-C 3 TIMES.
  268     C121CC      MOVE SECOND TO TITLE-TWO.
  269     C1211C      MOVE AUTHOR-NO TO AUTHOR-NUMBER.
  270     C12119      MOVE SPACES TO PRINT-LINE.
  271     C12212C     WRITE PRINT-LINE FROM LINE-2 AFTER ADVANCING 1 LINES.
  272     C12213C     PERFORM PROC-C.
  273     C12214C     MOVE PART1 TO MCLCIAGS-ONE.
  274     C12149      MOVE SPACES TO PRINT-LINE.
  275     C12215C     WRITE PRINT-LINE FROM LINE-3 AFTER ADVANCING 1 LINES.
  276     C12216C     PERFORM PROC-C.
  277     C12217C     MOVE PART2 TO MCLCIAGS-TWO.
  278     C12179      MOVE SPACES TO PRINT-LINE.
  279     C1218C      WRITE PRINT-LINE FROM LINE-4 AFTER ADVANCING 1 LINES.
  280     C1219C      PERFORM PROC-C.
  281     C122CC      MOVE A-SUB TO SUBJECT-ONE.
  282     01221C      MOVE B-SUB TO SUBJECT-TWO.
  283     01222C      MOVE C-SUB TO SUBJECT-THREE.
  284     01223C      MOVE D-SUB TO SUBJECT-FOUR.
  285     012235      MOVE SPACES TO PRINT-LINE.
  286     0[illegible]24C      WRITE PRINT-LINE FROM LINE-5 AFTER ADVANCING 2 LINES.
  287     C12[illegible]5C      PERFORM PROC-C 2 TIMES.
  288     013C2C      MOVE FLOOR-LOCATION TO LOCATION-FLOOR.
  289     013C4C      MOVE ACC-SOURCE TO ACQUISITION-SOURCE.
  290     013C6C      MOVE SUBS-STATUS TO STATUS-SUBS.
  291     013C8C      MOVE LANGUAGES TO LANGUAGE.
  292     0131CC      MOVE PHYS-FORM TO FORM.
  293     01319       MOVE SPACES TO PRINT-LINE.
  294     0131IC      WRITE PRINT-LINE FROM LINE-6 AFTER ADVANCING 1 LINES.
  295     013312C     PERFORM PROC-C.
  296     013314C     MOVE FREQ-RECD TO FREQUENCY.
  297     013316C     MOVE EXPIRE-DATE TO DATE-EXPIRES.
  298     0131BC      MOVE PAY-FLAG TO FLAG.
  299     0132CC      MOVE SUBSCRIPT-COST TO COST.
  300     0132C9      MOVE SPACES TO PRINT-LINE.
  301     013321C     WRITE PRINT-LINE FROM LINE-7 AFTER ADVANCING 1 LINES.
  302     013219      MOVE SPACES TO MCLC-REC.
  303     013322C     PERFORM PROC-C.
  304     01323C      GO TO START.
  305     01324C FINISH. STOP RUN.
  306     01325C PROC-A. WRITE PRINT-LINE FROM HEAD1 AFTER ADVANCING C LINES.
  307     014C1C      WRITE PRINT-LINE FROM HEAD2 AFTER ADVANCING 2 LINES.
  308     014C13      MOVE SPACES TO PRINT-LINE.
  309     014C16      WRITE PRINT-LINE AFTER ADVANCING 1 LINES.
  310     014C2C      COMPUTE LINE-COUNT = 6.
  311     014C3C PROC-B. CLOSE MCLCIAGS-FILE, PRINT-FILE.
  312     014C4C      GO TO FINISH.
  313     0 4C5C PROC-C. COMPUTE LINE-COUNT = LINE-COUNT + 1.
  314      14C6C      IF LINE-COUNT EQUAL TO 55 OR LINE-COUNT GREATER THAN 55
  315     014C7C      PERFORM PROC-A.
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Suggested Solution, Problem A, Part 2, Printout Sample

PRESCOTT LIBRARY

PERIODICAL HOLDINGS LIST

FORMAT FOR EACH ENTRY IN THIS LIST IS AS FOLLOWS:

FIRST LINE : ALPHA SEQUENCE NUMBER, FIRST HALF OF TITLE, CLASSIFICATION NUMBER, IF ANY.

SECOND LINE : SECOND HALF OF TITLE, IF NECESSARY; AUTHOR NUMBER (IF ANY) (THIS LINE MAY BE BLANK)

THIRD LINE : FIRST HALF OF HOLDINGS STATEMENT.

FOURTH LINE : SECOND HALF OF HOLDINGS STATEMENT, IF NECESSARY. (THIS LINE MAY BE BLANK)

(NOTE: AT LEAST ONE BLANK LINE SEPARATES LINES 4 & 9, TWO IF LINE 4 IS BLANK)

FIFTH LINE : SUBJECTS TREATED IN THE MAGAZINE, DETERMINED AS FOLLOWS:

FIRST LISTED, SUBJECT REFLECTED BY SCHOOL OR DEPARTMENT PAYING FOR THE TITLE.

SECOND LISTED, SUBJECT REFLECTED BY MAJOR INTEREST OF ITS TITLE.

THIRD LISTED, SUBJECT REFLECTED BY SECONDARY INTEREST OF ITS TITLE.

FOURTH LISTED, SUBJECT REFLECTED BY OTHER POSSIBLE USERS OF THE JOURNAL (IF ANY).

SIXTH LINE : (1) FLOOR OR AREA IN THE LIBRARY WHERE THE TITLE IS STORED.

(2) SOURCE FROM WHICH THE LIBRARY ACQUIRES THE TITLE, CODED.

(3) STATUS OF THE TITLE:

"CURRENT" MEANS THE TITLE IS CURRENTLY UNDER SUBSCRIPTION.

"DISCONTINUED" MEANS THE TITLE ONCE WAS BUT NO LONGER IS BEING ACQUIRED.

"CEASED" MEANS THE TITLE IS NO LONGER BEING PUBLISHED.

(4) LANGUAGE IN WHICH THE TITLE IS BEING PRINTED.

(5) FORM IN WHICH THE TITLE IS RECEIVED, CODED.

SEVENTH LINE : (6) FREQUENCY WITH WHICH ISSUES SHOULD ARRIVE IN THE LIBRARY, CODED.

(7) DATE UPON WHICH THE SUBSCRIPTION EXPIRES.

(8) FUND FROM WHICH THE SUBSCRIPTION IS PAID.

(9) ANNUAL COST OF THE SUBSCRIPTION.

CCC2CC A. I. DIGEST 636
AID

V. 9, 1961- TO PRESENT

AGRICULTURE ANIMAL HUSBAND.
(1) SECOND FLOOR (2) GIFT (3) CURRENT (4) ENGLISH (5) PA
(6) MO (7) 01C171 (8) AGRICULTURE (9) $ 1.50

CCC3CC ABERDEEN-ANGUS JOURNAL 636.2
AAJ

VOL. 39, 1957 THROUGH VOL. 42, 1961, INCOMPLETE; VOL. 43, 1962 TO PRESENT

AGRICULTURE ANIMAL HUSBAND.
(1) SECOND FLOOR (2) GIFT (3) CURRENT (4) ENGLISH (5) PA
(6) MO (7) 01C171 (8) AGRICULTURE (9) $ 4.00

CCC4CC ABSTRACTS OF ENGLISH STUDIES 8C5
AES

VOL. 1, 1958 TO PRESENT, COMPLETE

ARTS & SCIENCE ENGLISH
(1) SEVENTH FLOOR (2) GIFT (3) CURRENT (4) ENGLISH (5) PA
(6) MO (7) 01C171 (8) ENGLISH (9) $ 12.50

CCC5CC ACADEMIE DES SCIENCES, COMPTES RENDUS HEBDOMADAIRES DES 9C6
SEANCES: SERIE A, SCIENCES MATH.; SER. B, ... PHYSIQUES.
VOL. 262, 1966 TO PRESENT

ARTS & SCIENCE - MATHEMATICS PHYSICS
(1) SECOND FLOOR (2) FUSH (3) CURRENT (4) FRENCH (5) PA
(6) NR (7) 12917C (8) PHYSICS (9) $ 71.00

CCC6CC ACADEMIE DES SCIENCES, COMPTES RENDUS HEBDOMADAIRES DES 9C6
SEANCES: SERIE C, SCIENCES CHIMIQUES AC12C2
VOL. 262, 1966 TO PRESENT

ARTS & SCIENCE CHEMISTRY PHYSICS
(1) SECOND FLOOR (2) FUSH (3) CURRENT (4) FRENCH (5) PA
(6) NR (7) 12317C (8) PHYSICS (9) $ 71.05

CCC7CC ACADEMIE DES SCIENCES, COMPTES RENDUS HEBDOMADAIRES DES 9C6
SEANCES: SERIE C, SCIENCES NATURELLES AC12C3
VOL. 262, 1966 TO PRESENT

ARTS & SCIENCE SCIENCE PHYSICS
(1) SECOND FLOOR (2) FUSH (3) CURRENT (4) FRENCH (5) PA
(6) NR (7) 12917C (8) PHYSICS (9) $ 71.05

Suggested Solution, Problem A, Part 2, Printout Sample

PRESCOTT LIBRARY

PERIODICAL HOLDINGS LIST

CCCPCC ACADEMY OF MANAGEMENT, JOURNAL — 658.05 ACP

VOL. 1, 1958 TO PRESENT, COMPLETE

BUSINESS MANAGEMENT
(1) FIFTH FLOOR (2) DJPC (3) CURRENT (4) ENGLISH (5) P
(6) GL (7) C1C171 (8) BUSINESS ADMIN. (9) $ 10.00

CCC5CC ACADEMY OF POLITICAL SCIENCE, PROCEEDINGS — CAT. AS SEPARATES

VOL. 28, 1957, INCOMPLETE; VOL. 28, 1958 TO PRESENT

ARTS & SCIENCE SOCIAL SCIENCE POLITICAL SCI.
(1) FOURTH FLOOR (2) DC (3) CURRENT (4) ENGLISH (5) PA
(6) IN (7) 12317C (8) SOCIAL SCIENCE (9) $ 12.00

CC1CCC ACADEMY OF SCIENCES USSR, PROCEEDINGS, EARTH SCIENCES SECTIONS — 55C ASPE

VOL. 124, 1959 TO PRESENT

ENGINEERING EARTH SCIENCES
(1) SECOND FLOOR (2) PC (3) CURRENT (4) ENGLISH (5) PA
(6) RP (7) 12317C (8) ENGINEERING (9) $ 95.00

CC11CC BACTERIOLOGICAL REVIEWS — 589.905 BAR

VOL. 1, 1937 TO PRESENT, COMPLETE

ARTS & SCIENCE BOTANY BACTERIOLOGY
(1) SECOND FLOOR (2) DJPC (3) CURRENT (4) ENGLISH (5) PA
(6) GL (7) C1C171 (8) BOTANY (9) $ 10.00

CC12CC BALANCE SHEET — 650.5 BAS

VOL. 37, 1959 TO PRESENT

BUSINESS FINANCE ECONOMICS COMMERCE
(1) FIFTH FLOOR (2) CCGI (3) CURRENT (4) ENGLISH (5) PA
(6) PC (7) (8) (9) $ 0.00

CC13CC BANKING — 332.05 BAN

VOL. 35, 1942 TO PRESENT

BUSINESS BANKING FINANCE ECONOMICS
(1) FIFTH FLOOR (2) DJPC (3) CURRENT (4) ENGLISH (5) PA
(6) PO (7) C1C171 (8) BUSINESS ADMIN. (9) $ 8.00

CC14CC BARRON'S — 332.05 BAR

VOL. 27, 1947, INCOMPLETE; VOL. 28, 1948 TO PRESENT

BUSINESS FINANCE ECONOMICS
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(6) BK (7) C1C171 (8) BUSINESS ADMIN. (9) $ 10.00

CC17CC BEHAVIORAL SCIENCE — 150.5 BHS

VOL. 3, 1958 TO PRESENT

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CC18CC BELL SYSTEM TECHNICAL JOURNAL — 621.385 BST

VOL. 1, 1922 TO PRESENT, COMPLETE

ENGINEERING INDUSTRIAL ENG.
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CC19CC BELOIT POETRY JOURNAL — HUMANITIES

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CC2CCC BEST'S INSURANCE NEWS, FIRE AND CASUALTY EDITION — BUS. AND SOC. SC.

VOL. 58, 1957 THROUGH VOL. 63, 1963, INCOMPLETE; VOL. 11,

BUSINESS COMMERCE
(1) FIFTH FLOOR (2) DJPC (3) CURRENT (4) ENGLISH (5) PA
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Suggested Solution, Problem A, Part 2, Printout Sample

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CC23CC CAMELLIA JOURNAL — SCIENCE & TECHNOLOGY

VOL. 16, 1961, INCOMPLETE; VOL. 17 TO PRESENT

AGRICULTURE — BOTANY — HORTICULTURE
(1) SECOND FLOOR (2) QC (3) CURRENT (4) ENGLISH (5) PA
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CC25CC CANADIAN JOURNAL OF BOTANY — 580.5 CJB

VOL. 42, 1964 TO PRESENT

ARTS & SCIENCE — BOTANY
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CC28CC CANADIAN JOURNAL OF CHEMICAL ENGINEERING — 660.5 CCE

VOL. 35, 1957 TO PRESENT

ENGINEERING — CHEMISTRY
(1) SECOND FLOOR (2) FJSH (3) CURRENT (4) ENGLISH (5) PA
(6) BP (7) 12317C (8) ENGINEERING (9) $ 33.00

CC27CC CANADIAN JOURNAL OF CHEMISTRY — 540.5 CJC

VOL. 28, 1950 THROUGH VOL. 29, 1951, INCOMPLETE, VOL. 30, 1952 TO PRESENT

ARTS & SCIENCE — CHEMISTRY
(1) SECOND FLOOR (2) FJSH (3) CURRENT (4) ENGLISH (5) PA
(6) SP (7) 12317C (8) CHEMISTRY (9) $ 40.00

CC29CC CANADIAN JOURNAL OF MATHEMATICS — 510.5 CJM

VOL. 12, 1960 TO PRESENT

ARTS & SCIENCE — MATHEMATICS
(1) SECOND FLOOR (2) FJSH (3) CURRENT (4) ENGLISH (5) PA
(6) BP (7) 12317C (8) MATHEMATICS (9) $ 19.80

CC24CC CANADIAN JOURNAL OF MEDICAL TECHNOLOGY — 610 CJM

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ARTS & SCIENCE — ZOOLOGY — MEDICINE
(1) SECOND FLOOR (2) FJSH (3) CURRENT (4) MULTILINGUAL (5) PA
(6) BP (7) 12317C (8) ZOOLOGY (9) $ 5.50

CC30CC CANADIAN JOURNAL OF MICROBIOLOGY — 576.05 CJM

VOL. 1, 1954 TO PRESENT, COMPLETE

ARTS & SCIENCE — BOTANY — MICROBIOLOGY
(1) SECOND FLOOR (2) FJSH (3) CURRENT (4) MULTILINGUAL (5) PA
(6) MC (7) 12317C (8) BOTANY (9) $ 18.00

CC31CC CARCALLS — 051 CAR

VOL. 26, 1933 TO PRESENT

EDUCATION — PHYSICAL ED.
(1) SIXTH FLOOR (2) CJPC (3) CURRENT (4) ENGLISH (5) PA
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CC32CC DATA PROCESSING MAGAZINE — 651.8 DPM

VOL. 6, 1964 TO PRESENT

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(1) FIFTH FLOOR (2) CJPC (3) CURRENT (4) ENGLISH (5) PA
(6) PC (7) CIC171 (8) BUSINESS ADMIN. (9) $ 8.50

CC33CC FOSSIL CYCLOPHYLS, CHIEF — 745.05 FSF

VOL. 24, 1935 THROUGH VOL. 31, 1962 INCOMPLETE; VOL. 64, 1993 TO PRESENT

ARTS & SCIENCE — ART — EGYPTOLOGY
(1) SIXTH FLOOR (2) CJPC (3) CURRENT (4) ENGLISH (5) PA
(6) MP (7) CIC171 (8) ART (9) $ 4.50

CC34CC EGYPTOLOGY JOURNAL — 755.01 EGY

VOL. 45, 1957 TO PRESENT

ARTS & SCIENCE — ART — EGYPTOLOGY
(1) SIXTH FLOOR (2) CJPC (3) CURRENT (4) ENGLISH (5) PA
(6) MC (7) 12317C (8) ART (9) $ 10.00

Suggested Solution, Problem A, Part 2, Printout Sample

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PERIODICAL HOLDINGS LIST

CC41CC E L H (ENGLISH LITERARY HISTORY) 820.9 ELH

VOL. 32, 1965 TO PRESENT

ARTS & SCIENCE ENGLISH LITERATURE HISTORY
(1) SEVENTH FLOOR (2) OJPC (3) CURRENT (4) ENGLISH (5) PA
(6) GL (7) C1C171 (8) ENGLISH (9) $ 10.00

CC42CC EAST EUROPE 914.7 EAE

VOL. 7, 1958 THROUGH VOL. 14, 1965 INCOMPLETE; VOL. 15, 1966 TO PRESENT

ARTS & SCIENCE POLITICAL SCI. INTERNAT. STUD.
(1) FOURTH FLOOR (2) OJPC (3) CURRENT (4) ENGLISH (5) PA
(6) PO (7) C1C171 (8) C.C.I.S. (9) $ 5.00

CC43CC ECOLOGICAL MONOGRAPHS 574.05 ECP

VOL. 1, 1931 THROUGH VOL. 26, 1956 INCOMPLETE, VOL. 27, 1957 TO PRESENT

Problem B, Periodical Receipt Cards

Instructor's Notes:

The purpose of this problem is to illustrate one way to produce periodical check-in cards. The cards produced will be used as data in the next problem.

Class preparation may include an "instructions card" for each student. The holdings file will have to be available to the class as produced in Problem A, Part I.

Parameters:

Input; tape:

Same as output on Problem A, Part I.

Input; card:

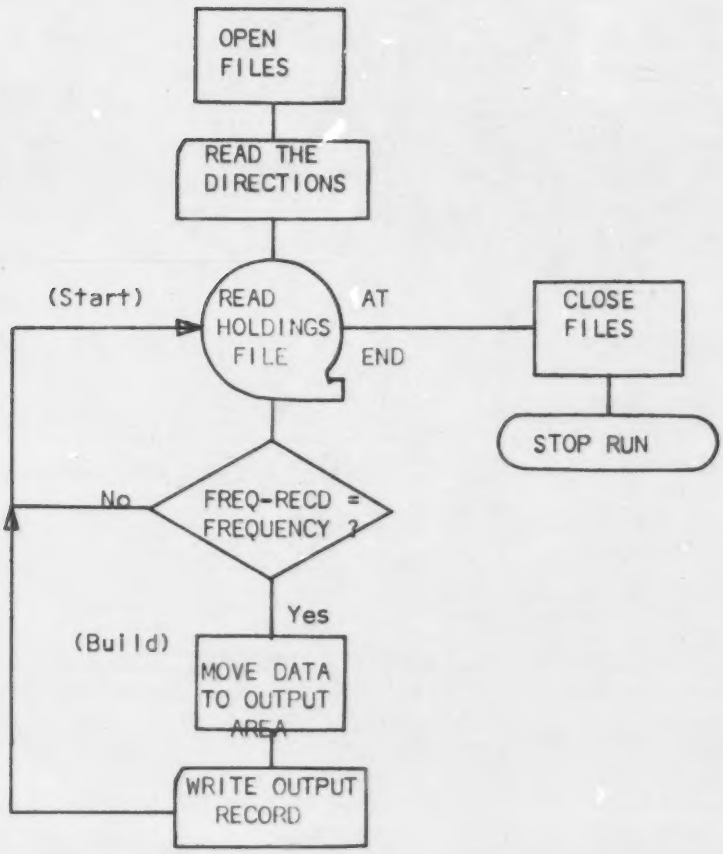
Cols.	1 - 2	Frequency
	3 - 10	Date expected
	11 - 80	Filler

Output; card:

Cols.	1 - 6	Sequence number
	7	Filler
	8 - 49	Title
	50	Filler
	51 - 58	Date
	59	Filler
	60 - 69	Dewey classification number
	70	slash
	71 - 80	Author number

Instructions:

Write a program that produces anticipated receipt cards in the above format. Ask computing center to interpret all 80 columns on the cards produced.

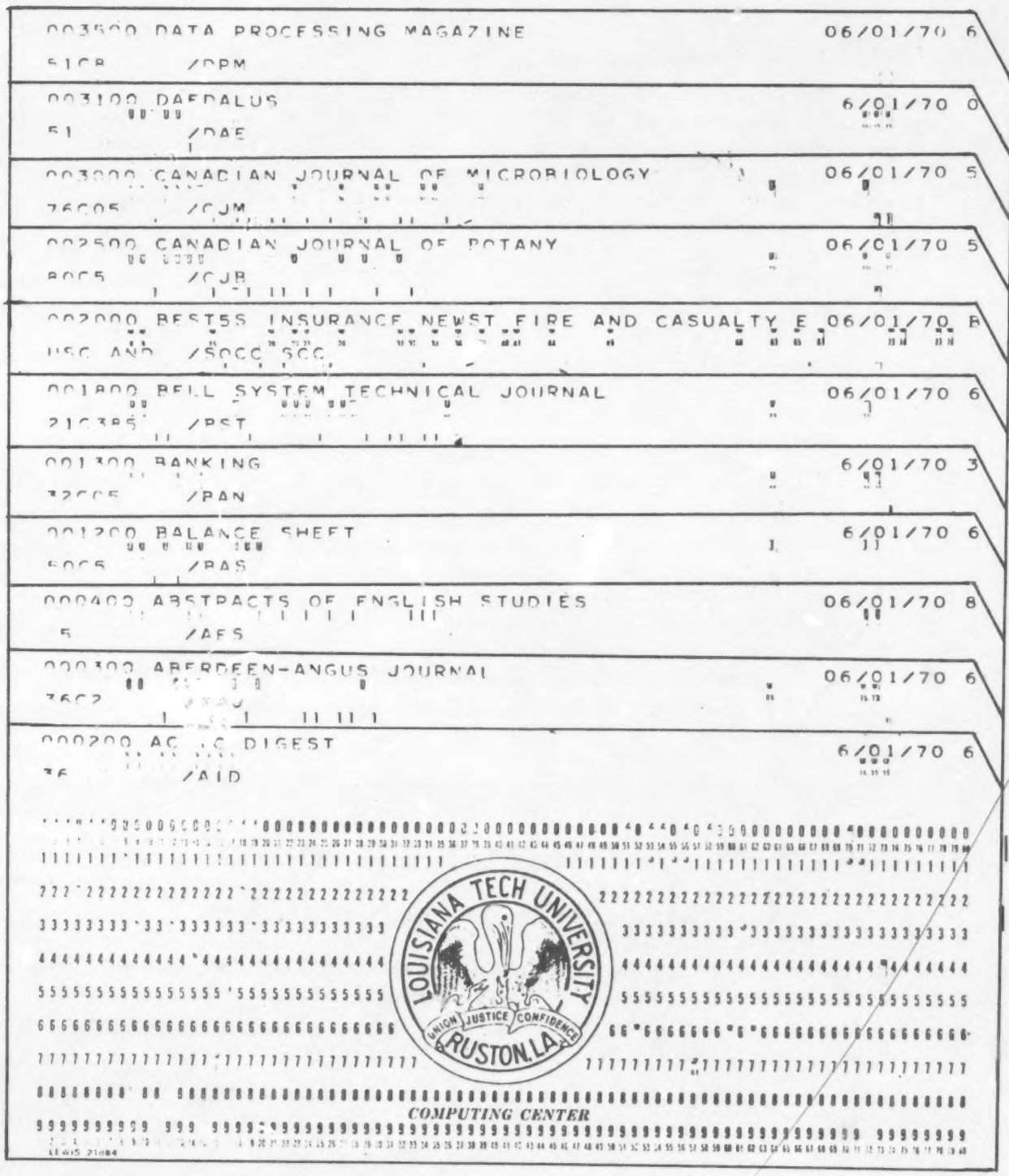


Suggested Solution
Problem B
Flowchart

Suggested Solution, Problem B, Program

```
LINE NO.  SEQ. NO.        SOURCE STATEMENT                          COBOL CL6-7 12/22/70
    1     000010 IDENTIFICATION DIVISION.
    2     000020 PROGRAM-ID. 'SERIAL'.
    3     000030 INSTALLATION. LOUISIANA TECH UNIVERSITY.
    4     000040 DATE-WRITTEN. DECEMBER 21, 1970
    5     000050 DATE-COMPILED. DECEMBER 21,1970.
    6     000060 REMARKS. SUGGESTED SOLUTION UNIT 5, PROBLEM B.
    7     000070 ENVIRONMENT DIVISION.
    8     000080 CONFIGURATION SECTION.
    9     000090 SOURCE-COMPUTER. IBM-360.
   10     000100 OBJECT-COMPUTER. IBM-360.
   11     000110 INPUT-OUTPUT SECTION.
   12     000120 FILE-CONTROL.
   13     000130     SELECT HOLDINGS-FILE ASSIGN TO 'SYS015' UTILITY 2400 UNIT.
   14     000140     SELECT DIRECTIONS-FILE ASSIGN TO 'SYS012' UNIT-RECORD 2540R.
   15     000150     SELECT ANRECO-FILE ASSIGN TO 'SYS013' UNIT-RECORD 2540P.
   16     000170 DATA DIVISION.
   17     000180 FILE SECTION.
   18     000190 FD  HOLDINGS-FILE RECORDING MODE IS F,  RECORD CONTAINS 416
   19     000200     CHARACTERS, BLOCK CONTAINS 8 RECORDS, LABEL RECORDS ARE
   20     000210     STANDARD, DATA RECORD IS HOLD-REC.
   21     000220 01  HOLD-REC.
   22     000230     02  A-SEC-NO          PICTURE 9(6).
   23     000240     02  CALL-NO.
   24     000250         03  D-CLASS-NO    PICTURE X(10).
   25     000260         03  AUTHOR-NO     PICTURE X(10).
   26     000270     02  TITLE.
   27     000280         03  FIRST         PICTURE X(62).
   28     000290         03  SECOND        PICTURE X(62).
   29     000300     02  HOLDINGS.
   30     000310         03  PART1         PICTURE X(62).
   31     000320         03  PART2         PICTURE X(62).
   32     000330     02  SUBJECTS.
   33     000340         03  A-SUB         PICTURE A(15).
   34     000350         03  B-SUB         PICTURE A(15).
   35     000360         03  C-SUB         PICTURE A(15).
   36     000370         03  D-SUB         PICTURE A(15).
   37     000380     02  FLOOR-LOCATION    PICTURE X(18).
   38     000390     02  ACQ-SOURCE        PICTURE A(5).
   39     000400     02  SUBS-STATUS       PICTURE A(8).
   40     000410     02  LANGUAGES         PICTURE A(13).
   41     000420     02  PHYS-FORM         PICTURE AAA.
   42     000430     02  FREQ-RECD         PICTURE AAA.
   43     000440     02  EXPIRE-DATE       PICTURE X(8).
   44     000450     02  PAY-FUND          PICTURE X(18).
   45     000460     02  SUBSCRIPT-COST    PICTURE 9999V99.
   46     000642 FD  DIRECTIONS-FILE RECORDING MODE IS F, RECORD CONTAINS 80
   47     000643     CHARACTERS, LABEL RECORDS ARE OMITTED, DATA RECORD IS DIRREC.
   48     000644 01  DIRREC.
   49     000645     02  FREQUENCY             PICTURE XX.
   50     000646     02  DATE-EXPECTED         PICTURE X(8).
   51     000647     02  FILLER                PICTURE X(70).
   52     000650 FD  ANRECO-FILE RECORDING MODE IS F, RECORD CONTAINS 80
   53     000660     CHARACTERS, LABEL RECORDS ARE OMITTED, DATA RECORDS ARE
   54     000670     ANRECO-RECORD.
   55     000680 01  ANRECO-RECORD          PICTURE X(80).
   56     000690 WORKING-STORAGE SECTION.
   57     000810 01  ARC-REC.
   58     000820     02  SEQUENCE-NO        PICTURE X(6)    VALUE ZERO.
   59     000830     02  FILLER             PICTURE X       VALUE SPACE.
   60     000840     02  TITLE              PICTURE X(42)   VALUE SPACE.
   61     000850     02  FILLER             PICTURE X       VALUE SPACE.
   62     000860     02  DATE               PICTURE X(8)    VALUE SPACE.
   63     000870     02  FILLER             PICTURE X       VALUE SPACE.
   64     000880     02  CALL-NO.
   65     000890         03  DEWEY-NO       PICTURE X(10)   VALUE SPACE.
   66     0009C0         03  SLASH          PICTURE X       VALUE '/'.
   67     000910         03  AUTH-NO        PICTURE X(10)   VALUE SPACE.
   68     001010 PROCEDURE DIVISION.
   69     001020     OPEN INPUT DIRECTIONS-FILE, INPUT HOLDINGS-FILE, OUTPUT
   70     001030     ANRECO-FILE.
   71     001040     READ DIRECTIONS-FILE AT END GO TO START.
   72     001050 START. READ HOLDINGS-FILE AT END GO TO FINISH.
   73     001060     IF FREQ-RECD = FREQUENCY PERFORM BUILD ELSE GO TO START.
   74     001070     GO TO START.
   75     001080 BUILD. MOVE A-SEC-NO TO SEQUENCE-NO.
   76     001090     MOVE FIRST TO TITLE.
   77     001100     MOVE DATE-EXPECTED TO DATE.
   78     001110     MOVE D-CLASS-NO TO DEWEY-NO.
   79     001120     MOVE AUTHOR-NO TO AUTH-NO.
   80     001130     WRITE ANRECO-RECORD FROM ARC-REC.
   81     001140 FINISH. CLOSE DIRECTIONS-FILE, HOLDINGS-FILE, ANRECO-FILE.
   82     001150     STOP RUN.
```

Suggested Solution, Problem B, Sample Printout



Problem C: Claim Letters

Instructor's Notes:

The check-in cards produced in the previous program represent periodicals that are expected to arrive. Those that do are used in the check-in procedure, but those that do not will be used in this program as data. Choose at random the ten cards to be used in this problem or ask the students to do so. In this problem the first opportunity will be available to use disk files. The following new control cards will be necessary: for part 1,

```
 / ASSGN SYS004, x'191'
// LBLTYP NSD(2)                                          p. 21*
// DLBL SYS004, 'PUBLISHER ADDRESSES', 0, ISC             pp. 28-29*
// EXTENT SYS004, 999999, 4, 1, 10, 10                    pp. 30-32*
// EXTENT SYS004, 999999, 1, 2, 20, 30
```

For part 2, they will be the same except substitute the following for the DLBL above:

```
// DLBL SYS004, 'PUBLISHER ADDRESSES', 0, ISE
```

The FILE-CØNTRØL assignment for the disk file in part 2 will be as follows: (pp. 25-31**)

```
SELECT file-name ASSIGN TØ 'SYS004' DIRECT-ACCESS 2311 UNIT,
   ACCESS IS RANDØM, ØRGANIZATIØN IS INDEXED, RESERVE
   NØ ALTERNATE AREA, SYMBØLIC KEY IS SØURCE-CØDE,
   RECØRD KEY IS CØDE.
```

The FILE-CØNTRØL assignment for the disk file in part 1 will be as follows:

```
SELECT file-name ASSIGN TØ 'SYS004' DIRECT-ACCESS 2311 UNIT,
   ACCESS IS SEQUENTIAL, ØRGANIZATIØN IS INDEXED, RESERVE
   NØ ALTERNATE AREA, RECØRD KEY IS CØDES.
```

* refers to pages in the COBOL PROGRAMMER'S GUIDE upon which one can find the discussions of the statements given.

** refers to pages in the COBOL LANGUAGE SPECIFICATIONS upon which one can find the discussions of the statements given.

Parameters:

Part 1:

Input: cards

code	cols. 1 - 4
name	5 - 29
address	30 - 54
place & zip	55 - 80

Output: disk

same as above

Part 2:

Input: tape

same as previous holdings file

Input: disk

same as above

Input: cards

same as output in previous problem

Output:

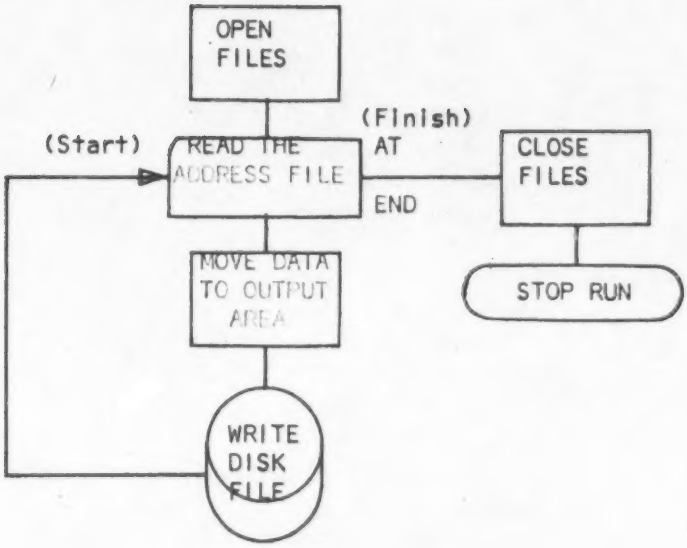
To be designed by the student

Instructions:

Part 1: The student is to write a program to create from cards a disk file of addresses which can, in turn, be used in part 2 of this problem.

Part 2: Write a program which will merge all the necessary information off the various files to produce a claim letter of the student's own design.

As usual, the problems must be flowcharted before programming.

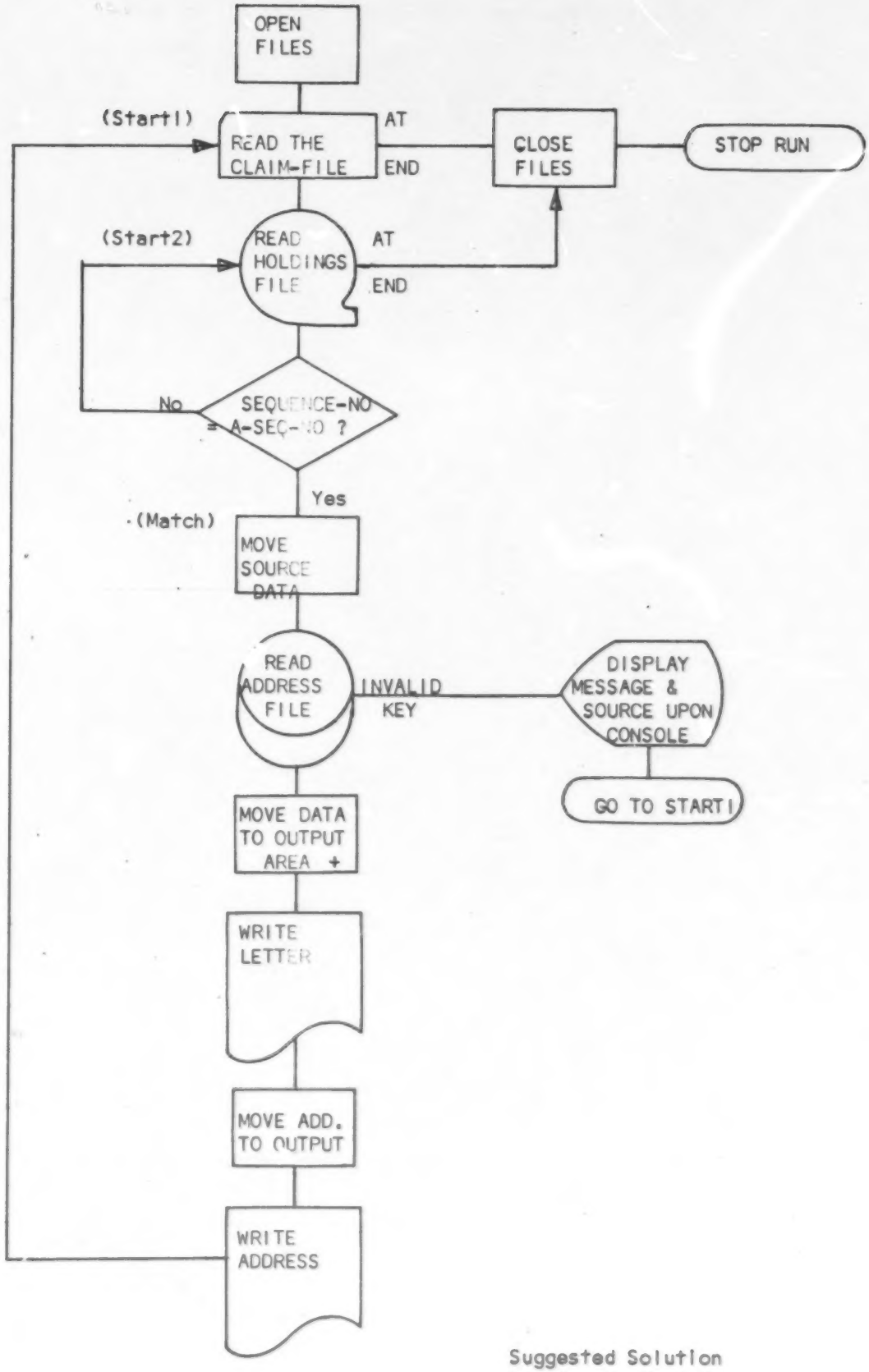


Suggested Solution
Problem C, Part I
Flowchart

Suggested Solution, Problem C, Part 1, Program

```
LINE NO.  SEQ. NO.        SOURCE STATEMENT                          COBOL CL3-7 12/22/70

      1   000040 IDENTIFICATION DIVISION.
      2   000050 PROGRAM-ID. 'SERIAL'.
      3   000060 INSTALLATION. LOUISIANA TECH UNIVERSITY.
      4   000070 DATE-WRITTEN. MAY 11, 1970.
      5   000080 DATE-COMPILED. MAY 15, 1970.
      6   000090 REMARKS. PRESCOTT LIB'S. S.A.P. - PUB. ADDRESS FILE PRODUCTION.
      7   000100 ENVIRONMENT DIVISION.
      8   000110 CONFIGURATION SECTION.
      9   000120 SOURCE-COMPUTER. IBM-360.
     10   000130 OBJECT-COMPUTER. IBM-360.
     11   000140 INPUT-OUTPUT SECTION.
     12   000150 FILE-CONTROL.
     13   000160     SELECT ADDRESS-CARD
     14   000170       ASSIGN TO 'SYS012' UNIT-RECORD 2540R.
     15   000180     SELECT ADDRESS-FILE
     16   000190       ASSIGN TO 'SYS004' DIRECT-ACCESS 2311 UNIT, ACCESS IS
     17   000200       SEQUENTIAL, ORGANIZATION IS INDEXED, RESERVE NO ALTERNATE
     18   000210       AREA, RECORD KEY IS CODES.
     19   000220 DATA DIVISION.
     20   000230 FILE SECTION.
     21   000240 FD  ADDRESS-CARD RECORDING MODE IS F, RECORD CONTAINS 80
     22   000310     CHARACTERS, LABEL RECORDS ARE OMITTED, DATA RECORDS ARE
     23   000320     CARD-ACD.
     24   000330 01  CARD-ACD.
     25   000340     02  CODE                  PICTURE A(4).
     26   000350     02  NAME                  PICTURE X(25).
     27   000360     02  ADDRESS               PICTURE X(25).
     28   000370     02  PLACE                 PICTURE X(26).
     29   000380 FD  ADDRESS-FILE RECORDING MODE IS F, RECORD CONTAINS 80
     30   000390     CHARACTERS, LABEL RECORDS ARE STANDARD, DATA RECORDS ARE
     31   000400     ADDRESS-RECORD.
     32   000410 01  ADDRESS-RECORD.
     33   000420     02  CODES                 PICTURE AAAA.
     34   000430     02  NAMES                 PICTURE X(25).
     35   000440     02  ADDRESSES             PICTURE X(25).
     36   000450     02  PLACES                PICTURE X(26).
     37   000460 PROCEDURE DIVISION.
     38   000470     OPEN INPUT ADDRESS-CARD, OUTPUT ACCRESS-FILE.
     39   000480 START. READ ADDRESS-CARD AT END GO TO FINISH.
     40   000490     MOVE CODE TO CODES.
     41   000500     MOVE NAME TO NAMES.
     42   000510     MOVE ADDRESS TO ADDRESSES.
     43   000520     MOVE PLACE TO PLACES.
     44   000530     WRITE ADDRESS-RECORD.
     45   000540     GO TO START.
     46   000610 FINISH. CLOSE ADDRESS-CARD, ACCRESS-FILE.
     47   000620     STOP RUN.
```



Suggested Solution
Problem C, Part 2
Flowchart

Suggested Solution, Problem C, Part 2, Program

```
LINE NO. SEQ. NO.          SOURCE STATEMENT                          COBOL CL3-7 12/22/70

     1   000040 IDENTIFICATION DIVISION.
     2   000050 PROGRAM-ID. 'SERIAL'.
     3   000060 INSTALLATION. LOUISIANA TECH UNIVERSITY.
     4   000070 DATE-WRITTEN. MAY 11, 1970.
     5   000080 DATE-COMPILED. MAY 15, 1970.
     6   000090 REMARKS. PRESCOTT LIBRARY'S S.A.P. - CLAIMS LETTERS PRODUCTION.
     7   000100 ENVIRONMENT DIVISION.
     8   000110 CONFIGURATION SECTION.
     9   000120 SOURCE-COMPUTER. IBM-360.
    10   000130 OBJECT-COMPUTER. IBM-360.
    11   000140 INPUT-OUTPUT SECTION.
    12   000150 FILE-CONTROL.
    13   000160     SELECT HOLDINGS-FILE
    14   000170       ASSIGN TO 'SYS015' UTILITY 2400 UNIT.
    15   000180     SELECT ADDRESS-FILE
    16   000190       ASSIGN TO 'SYS004' DIRECT-ACCESS 2311 UNIT, ACCESS IS
    17   000200       RANDOM, ORGANIZATION IS INDEXED, RESERVE NO ALTERNATE AREA,
    18   000205       SYMBOLIC KEY IS SOURCE-CODE, RECORD KEY IS CODE.
    19   000220     SELECT CLAIM-FILE
    20   000230       ASSIGN TO 'SYS012' UNIT-RECORD 2540R.
    21   000240     SELECT PRINT-FILE
    22   000310       ASSIGN TO 'SYS014' UNIT-RECORD 1403.
    23   000320 DATA DIVISION.
    24   000330 FILE SECTION.
    25          FD  HOLDINGS-FILE RECORDING MODE IS F,  RECORD CONTAINS 416
    26              CHARACTERS, BLOCK CONTAINS 8 RECORDS, LABEL RECORDS ARE
    27              STANDARD, DATA RECORD IS HOLD-REC.
    28          01  HOLD-REC.
    29              02  A-SEC-NO          PICTURE 9(6).
    30              02  CALL-NO.
    31                  03  D-CLASS-NO    PICTURE X(10).
    32                  03  AUTHOR-NO     PICTURE X(10).
    33              02  TITLEA.
    34                  03  FIRST         PICTURE X(42).
    35                  03  SECOND        PICTURE X (21).
    36              02  HOLDINGS.
    37                  03  PART1         PICTURE X(62).
    38                  03  PART2         PICTURE X(62).
    39              02  SUBJECTS.
    40                  03  A-SUB         PICTURE A(15).
    41                  03  B-SUB         PICTURE A(15).
    42                  03  C-SUB         PICTURE A(15).
    43                  03  D-SUB         PICTURE A(15).
    44              02  FLOOR-LOCATION    PICTURE X(18).
    45              02  ACQ-SOURCE        PICTURE A(5).
    46              02  SUBS-STATUS       PICTURE A(8).
    47              02  LANGUAGES         PICTURE A(13).
    48              02  PHYS-FORM         PICTURE AAA.
    49              02  FREQ-RECD         PICTURE AAA.
    50              02  EXPIRE-DATE       PICTURE X(8).
    51              02  PAY-FUND          PICTURE X(18).
    52              02  SUBSCRIPT-COST    PICTURE 9999V99.
    53   000740 FD  ADDRESS-FILE RECORDING MODE IS F, RECORD CONTAINS 80
    54   000750       CHARACTERS, LABEL RECORDS ARE STANDARD, DATA RECORD IS
    55   000760       ADDRESS-RECORD.
    56   000770 01  ADDRESS-RECORD.
    57   000780       02  CODE                    PICTURE A(4).
    58   000790       02  NAME                    PICTURE X(25).
    59   000800       02  POST-OFFICE-ADD         PICTURE X(25).
    60   000810       02  PLACE                   PICTURE X(26).
    61   000820 FD  CLAIM-FILE RECORDING MODE IS F, RECORD CONTAINS 80
    62   000830       CHARACTERS, LABEL RECORDS ARE OMITTED, DATA RECORDS ARE
    63   000840       CLAIM-RECORD.
    64   000850 01  CLAIM-RECORD.
    65   000860       02  SEQUENCE-NO             PICTURE X(6).
    66   000870       02  FILLER                  PICTURE X.
    67   000880       02  TITLE                   PICTURE X(42).
    68   000890       02  FILLER                  PICTURE X.
    69   000910       02  DATE                    PICTURE X(8).
    70   000915       02  FILLER                  PICTURE X.
    71   000920       02  CALL-NO                 PICTURE X(21).
    72   000925 FD  PRINT-FILE RECORDING MODE IS F, RECORD CONTAINS 133
    73   000930       CHARACTERS, LABEL RECORDS ARE OMITTED, DATA RECORD IS
    74   000931       PRINT-LINE.
    75   000932 01  PRINT-LINE              PICTURE X(133).
    76   000933 WORKING-STORAGE SECTION.
    77   000934 77  SOURCE-CODE             PICTURE AAAA.
    78   000940 01  LINE1.
    79   000950       02  FILLER      PICTURE X(33)   VALUE SPACES.
    80   000960       02  LIB-NAME    PICTURE X(20)   VALUE 'PRESCOTT LIBRARY'.
    81   000970       02  FILLER      PICTURE X(80)   VALUE SPACES.
    82   000980 01  LINE2.
    83   000990       02  FILLER      PICTURE X(30)   VALUE SPACES.
    84   001000       02  UNIV-NAME   PICTURE X(75)   VALUE 'LOUISIANA TECH UNIVERS
    85   001010-     'ITY'.
    86   001020       02  FILLER      PICTURE X(28)   VALUE SPACES.
    87   001030 01  LINE3.
    88   001040       02  FILLER      PICTURE X(31)   VALUE SPACES.
    89   001050       02  SENTENCE1   PICTURE X(23)   VALUE 'RUSTON, LOUISIANA 7127
    90   001060-     '6'.
    91   001070       02  FILLER      PICTURE X(79)   VALUE SPACES.
    92   001080 01  LINE4.
    93   001090       02  FILLER      PICTURE X(9)    VALUE SPACES.
    94   001100       02  SENTENCE2   PICTURE X(63)   VALUE 'THE LATEST ISSUE OF TH
    95   001110-     'E FOLLOWING TITLE HAS NOT AT THIS WRITING'.
    96   001120       02  FILLER      PICTURE X(61)   VALUE SPACES.
    97   001130 01  LINE5.
    98   001140       02  FILLER      PICTURE X(9)    VALUE SPACES.
    99   001150       02  SENTENCE3   PICTURE X(60)   VALUE 'BEEN RECEIVED BY THIS
   100   001160     'LIBRARY. PLEASE CHECK YOUR RECORDS AND'.
   101   001170       02  FILLER      PICTURE X(64)   VALUE SPACES.
   102   001180 01  LINE6.
   103   001190       02  FILLER      PICTURE X(9)    VALUE SPACES.
   104   001200       02  SENTENCE4   PICTURE X(30)   VALUE 'SEND US A COPY BY RETU
   105   001210-     'RN MAIL'.
   106   001220       02  FILLER      PICTURE X(94)   VALUE SPACES.
   107   001230 01  PUBLISHER.
   108   001240       02  FILLER      PICTURE X(45)   VALUE SPACES.
   109   001250       02  PUB-NAME    PICTURE X(25)   VALUE SPACES.
   110   001260       02  FILLER      PICTURE X(63)   VALUE SPACES.
   111   001270 01  P-O-ADD.
   112   001280       02  FILLER      PICTURE X(45)   VALUE SPACES.
```

Suggested Solution, Problem C, Part 2, Program (continued)

```
LINE NO.  SEQ. NO.          SOURCE STATEMENT

    111   001290     02  POST-OFF      PICTURE X(25)   VALUE SPACES.
    114   001300     02  FILLER4       PICTURE X(63)   VALUE SPACES.
    115   001310 01  CITY.
    116   001320     02  FILLER5       PICTURE X(45)   VALUE SPACES.
    117   001330     02  CITY-STATE    PICTURE X(26)   VALUE SPACES.
    118   001340     02  FILLER6       PICTURE X(62)   VALUE SPACES.
    119   001350 01  TITLE-LIST.
    120   001360     02  FILLER7       PICTURE X(14)   VALUE SPACES.
    121   001370     02  LABEL6        PICTURE X(7)    VALUE 'TITLE:'.
    122   001380     02  ISSUE-TITLE   PICTURE X(42)   VALUE SPACES.
    123   001390     02  FILLER8       PICTURE X(70)   VALUE SPACES.
    124   001391 01  EX-REC-DATE.
    125   001392     02  FILLER9       PICTURE X(14)   VALUE SPACES.
    126   001393     02  LABEL7        PICTURE X(24)   VALUE 'EXPECTED RECEIPT DATE:
    127   001394     '.
    128   001395     02  EX-DATE       PICTURE X(8)    VALUE SPACES.
    129   001396     02  FILLER9       PICTURE X(44)   VALUE SPACES.
    130   001410 PROCEDURE DIVISION.
    131   001420     OPEN INPUT HOLDINGS-FILE, ADDRESS-FILE, CLAIM-FILE, OUTPUT
    132   001430       PRINT-FILE.
    133   001440 START1. READ CLAIM-FILE AT END GO TO FINISH.
    134   001450 START2. READ HOLDINGS-FILE AT END GO TO FINISH.
    135   001460     IF SEQUENCY-NO = A-SEQ-NO PERFORM MATCH ELSE GO TO START2.
    136   001470     GO TO START1.
    137   001480 MATCH. MOVE ACC-SOURCE TO SOURCE-CODE.
    138   001500     READ ADDRESS-FILE INVALID KEY GO TO NO-REC.
    139   001501     MOVE SPACES TO PRINT-LINE.
    140   001502     WRITE PRINT-LINE AFTER 0 LINES.
    141   001504     MOVE DATE TO EX-DATE.
    142   001508     MOVE TITLE TO ISSUE-TITLE.
    143   001510     WRITE PRINT-LINE FROM LINE1 AFTER 1 LINES.
    144   001520     WRITE PRINT-LINE FROM LINE2 AFTER 1 LINES.
    145   001530     WRITE PRINT-LINE FROM LINE3 AFTER 1 LINES.
    146   001540     WRITE PRINT-LINE FROM LINE4 AFTER 3 LINES.
    147   001550     WRITE PRINT-LINE FROM LINE5 AFTER 1 LINES.
    148   001560     WRITE PRINT-LINE FROM LINE6 AFTER 1 LINES.
    149   001565     WRITE PRINT-LINE FROM TITLE-LIST AFTER 2 LINES.
    150   001567     WRITE PRINT-LINE FROM EX-REC-DATE AFTER 1 LINES.
    151   001584     MOVE SPACES TO PRINT-LINE.
    152   001588     WRITE PRINT-LINE AFTER 2 LINES.
    153   001590     MOVE NAME TO PUB-NAME.
    154   001600     MOVE POST-OFFICE-ADD TO POST-OFF.
    155   001610     MOVE PLACE TO CITY-STATE.
    156   001620     WRITE PRINT-LINE FROM PUBLISHER AFTER 2 LINES.
    157   001630     WRITE PRINT-LINE FROM P-C-ADD AFTER 1 LINES.
    158   001640     WRITE PRINT-LINE FROM CITY AFTER 1 LINES.
    159   001730 NO-REC. DISPLAY 'AC RECORD FOUND' UPON CONSOLE.
    160   001740     DISPLAY SOURCE-CODE UPON CONSOLE.
    161   001750     GO TO START1.
    162   001760 FINISH. CLOSE HOLDINGS-FILE, ADDRESS-FILE, CLAIM-FILE, PRINT-FILE
    163   001770-    .
    164   001780     STOP RUN.
```

Suggested Solution, Problem C, Part 2, Sample Printout

PRESCOTT LIBRARY
LOUISIANA TECH UNIVERSITY
RUSTON, LOUISIANA 71270

THE LATEST ISSUE OF THE FOLLOWING TITLE HAS NOT AT THIS WRITING BEEN RECEIVED BY THIS LIBRARY. PLEASE CHECK YOUR RECORDS AND SEND US A COPY BY RETURN MAIL:

TITLE: A. I. DIGEST
EXPECTED RECEIPT DATE: 06/01/70

MOORE-COTTRELL SUBS. AG.

NORTH CONCORD, NY 14868

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RUSTON, LOUISIANA 71270

THE LATEST ISSUE OF THE FOLLOWING TITLE HAS NOT AT THIS WRITING BEEN RECEIVED BY THIS LIBRARY. PLEASE CHECK YOUR RECORDS AND SEND US A COPY BY RETURN MAIL:

TITLE: BALANCE SHEET
EXPECTED RECEIPT DATE: 06/01/70

.
.
.

G

PRESCOTT LIBRARY
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THE LATEST ISSUE OF THE FOLLOWING TITLE HAS NOT AT THIS WRITING BEEN RECEIVED BY THIS LIBRARY. PLEASE CHECK YOUR RECORDS AND SEND US A COPY BY RETURN MAIL:

TITLE: CANADIAN JOURNAL OF ROTARY
EXPECTED RECEIPT DATE: 06/01/70

STECHERT-HAFNER
31 EAST 10TH ST.
NEW YORK, NY 10003

PRESCOTT LIBRARY
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THE LATEST ISSUE OF THE FOLLOWING TITLE HAS NOT AT THIS WRITING BEEN RECEIVED BY THIS LIBRARY. PLEASE CHECK YOUR RECORDS AND SEND US A COPY BY RETURN MAIL:

TITLE: LABOR LAW JOURNAL
EXPECTED RECEIPT DATE: 06/01/70

.
.
.

Suggested Solution, Problem C, Part 2, Console Printout

```
   8G // JOB CLAIMS (16001,33005),'SAM DYSON',TIME=005
   8G NO RECORD FOUND
   8G FJ
   8G EOJ CLAIMS
   8G // JOB CS-STV (14705,40020),'DOUGLAS A. VASTINE',TIME=005
```

Problem D: Update Program

Instructor's Notes:

In this problem the object is to write a program that will make possible the updating of each field on the periodical holdings file. Both input files must be in sequence number order. Classroom preparation will include the preparation of data cards having updated information on them--the students may do this if they have discovered errors in the listing produced in Problem A, Part 2 of this unit.

Newly introduced in this problem is level 88 constants in the WØRKING-STØRAGE SECTIØN. This procedure allows the various fields to be coded, yet referred to by their names in the program, and conserves limited space in data cards. A level 88 constant requires the ... VALUE IS ... statement.

Parameters:

Input, tape:
Same as in previous statements

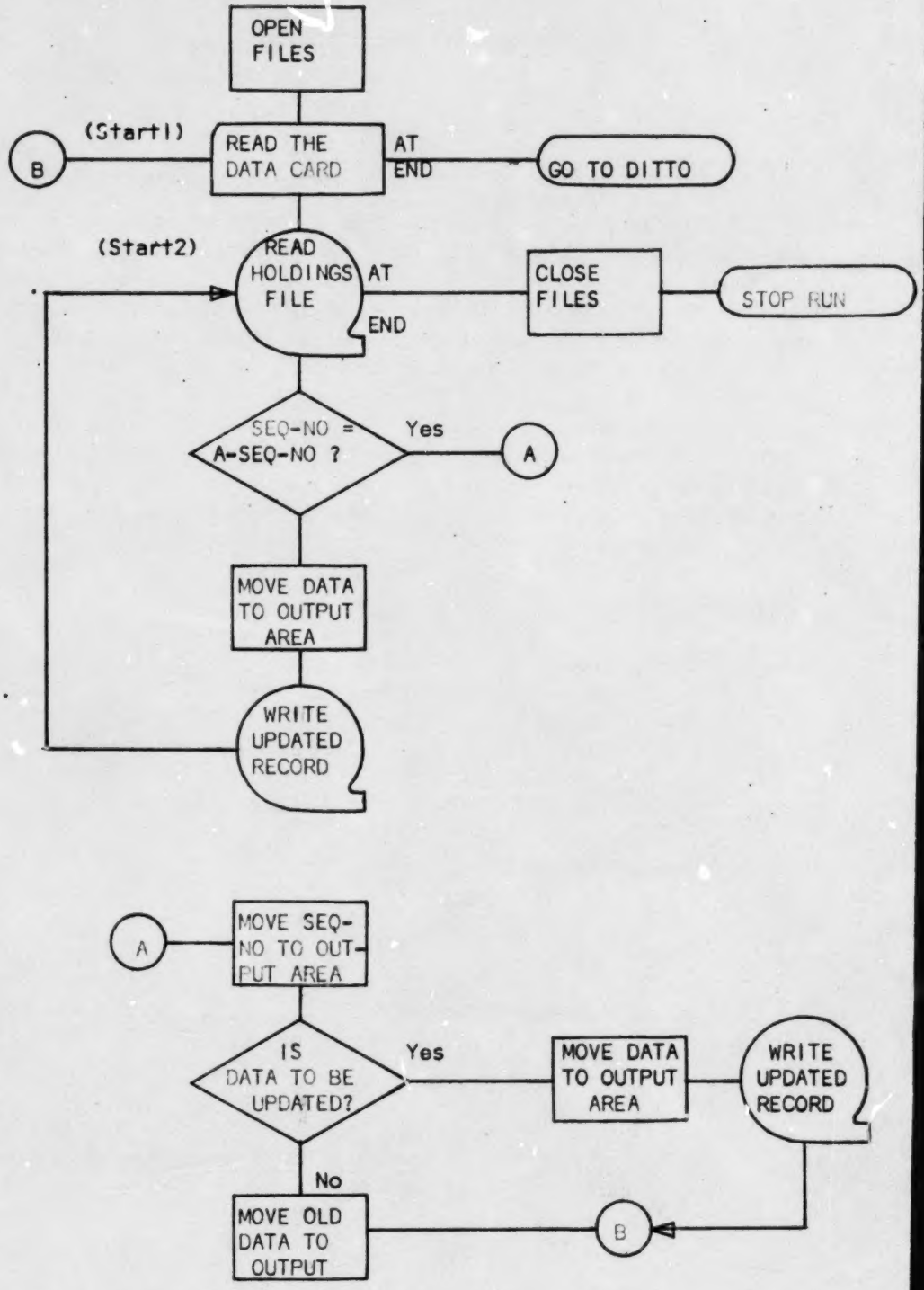
Input, cards:

cols.	1 - 6	sequence number
	7 - 8	description
	9 - 80	update data

Output, tape:
Same as above.

Instructions:

Write a program that accepts new data and updates the holdings file. Request a tape DEBE to prove your success.



Suggested Solution
Problem D
Flowchart

Suggested Solution, Problem D, Program

```
LINE NO.  SEQ. NO.        SOURCE STATEMENT                                  COBOL CL3-7 12/22/70

    1     000010 IDENTIFICATION DIVISION.
    2     000020 PROGRAM-ID. 'SERIAL'.
    3     000030 INSTALLATION. LOUISIANA TECH UNIVERSITY.
    4     000040 DATE-WRITTEN.  DECEMBER 22, 1970.
    5     000050 DATE-COMPILED. DECEMBER 23, 1970.
    6     000060 REMARKS. SUGGESTED SOLUTION, UNIT V, PROBLEM D.
    7     000070 ENVIRONMENT DIVISION.
    8     000080 CONFIGURATION SECTION.
    9     000090 SOURCE-COMPUTER. IBM-360.
   10     000100 OBJECT-COMPUTER. IBM-360.
   11     000110 INPUT-OUTPUT SECTION.
   12     000120 FILE-CONTROL.
   13     000130     SELECT HOLDINGS-FILE
   14     000140     ASSIGN TO 'SYS015' UTILITY 2400 UNIT.
   15     000150     SELECT DATA-CARD
   16     000160     ASSIGN TO 'SYS012' UNIT-RECORD 2540R.
   17     000170     SELECT UPDATE-FILE
   18     000180     ASSIGN TO 'SYS016' UTILITY 2400 UNIT.
   19     000190 DATA DIVISION.
   20     000200 FILE SECTION.
   21     000210 FD  HOLDINGS-FILE RECORDING MODE IS F, RECORD CONTAINS 416
   22     000220     CHARACTERS, BLOCK CONTAINS 8 RECORDS, LABEL RECORDS ARE
   23     000230     STANDARD, DATA RECORD IS HOLDINGS-RECORD.
   24     000240 01  HOLDINGS-RECORD.
   25     000241     02  A-SEQ-NO              PICTURE X(6).
   26     000242     02  CALL-NO.
   27     000243         03  D-CLASS-NO   PICTURE X(10).
   28     000244         03  AUTHOR-NO    PICTURE X(10).
   29     000245     02  TITLE.
   30     000246         03  FIRST        PICTURE X(62).
   31     000247         03  SECOND       PICTURE X(62).
   32                02  HOLDINGS.
   33                    03  PART1        PICTURE X(62).
   34                    03  PART2        PICTURE X(62).
   35     000248     02  SUBJECTS.
   36     000249         03  A-SUB             PICTURE X(15).
   37     000250         03  B-SUB             PICTURE X(15).
   38     000251         03  C-SUB             PICTURE X(15).
   39     000252         03  D-SUB             PICTURE X(15).
   40     000254     02  FLOOR-LOCATION        PICTURE X(18).
   41     000256     02  ACQ-SOURCE            PICTURE A(5).
   42     000258     02  SUBS-STATUS           PICTURE A(8).
   43     000260     02  LANGUAGE-USED         PICTURE A(13).
   44     000262     02  PHYS-FORM             PICTURE A(3).
   45     000264     02  FREQ-RECD             PICTURE AAA.
   46     000266     02  EXPIRE-DATE           PICTURE X(8).
   47     000268     02  PAY-FUND              PICTURE X(18).
   48     000270     02  SUBSCRIPT-COST        PICTURE X(6).
   49     000280 FD  DATA-CARD RECORDING MODE IS F, RECORD CONTAINS 80 CHARACTERS,
   50     000290     LABEL RECORDS ARE OMITTED, DATA RECORDS ARE DATA-RECORDS.
   51     000300 01  DATA-RECORDS              PICTURE X(80).
   52     000310 FD  UPDATE-FILE RECORDING MODE IS F, RECORD CONTAINS 416
   53     000320     CHARACTERS, BLOCK CONTAINS 8 RECORDS, LABEL RECORDS ARE
   54     000330     STANDARD, DATA RECORD IS UPDATE-RECORD.
   55     000340 01  UPDATE-RECORD         PICTURE X(416).
   56     000350 WORKING-STORAGE SECTION.
   57     000360 01  DATA-REC.
   58     000370     02  SEC-NC                PICTURE X(6)    VALUE SPACE.
   59     000380     02  DESCRIPTION           PICTURE 99.
   60     000390         88  TITLEA           VALUE IS 01.
   61     000400         88  TITLEB           VALUE IS 02.
   62     000410         88  CLASSNO          VALUE IS 03.
   63     000420         88  AUTHNO           VALUE IS 04.
   64     000430         88  HOLDA            VALUE IS 05.
   65     000440         88  HOLDB            VALUE IS 06.
   66     000450         88  SUBA             VALUE IS 07.
   67     000460         88  SUBB             VALUE IS 08.
   68     000470         88  SUBC             VALUE IS 09.
   69     000480         88  SUBD             VALUE IS 10.
   70     000490         88  LOCATION         VALUE IS 11.
   71     000500         88  SOURCE           VALUE IS 12.
   72     000510         88  STATUS           VALUE IS 13.
   73     000520         88  LANGUAGE         VALUE IS 14.
   74     000530         88  FORM             VALUE IS 15.
   75     000540         88  FREQ             VALUE IS 16.
   76     000550         88  XDATE            VALUE IS 17.
   77     000560         88  FUND             VALUE IS 18.
   78     000570         88  COST             VALUE IS 19.
   79     000580     02  LP-DATA               PICTURE X(72)   VALUE SPACE.
   80     000590 01  UPDATE-REC.
   81     000600     02  U-SEQ-NO              PICTURE X(6)    VALUE SPACE.
   82     000610     02  U-CALL-NO.
   83     000613         03  U-CLASS-NO   PICTURE X(10)   VALUE SPACE.
   84     000616         03  U-AUTH-NO    PICTURE X(10)   VALUE SPACE.
   85     000620     02  U-TITLE.
   86     000623         03  U-TITLEA     PICTURE X(62)   VALUE SPACE.
   87     000626         03  U-TITLEB     PICTURE X(62)   VALUE SPACE.
   88     000630     02  U-HOLDINGS.
   89     000633         03  U-HOLDINGSA PICTURE X(62)   VALUE SPACE.
   90     000636         03  U-HOLDINGSB PICTURE X(62)   VALUE SPACE.
   91     000670     02  U-SUBJECTS.
   92     000680         03  U-SUBA           PICTURE X(15)   VALUE SPACE.
   93     000690         03  U-SUBB           PICTURE X(15)   VALUE SPACE.
   94     000700         03  U-SUBC           PICTURE X(15)   VALUE SPACE.
   95     000710         03  U-SUBD           PICTURE X(15)   VALUE SPACE.
   96     000730     02  U-FLOOR              PICTURE X(18)   VALUE SPACE.
   97     000750     02  U-ACQ                PICTURE A(5)    VALUE SPACE.
   98     000770     02  U-STATUS             PICTURE A(8)    VALUE SPACE.
   99     000790     02  U-LANG               PICTURE A(13)   VALUE SPACE.
  100     000810     02  U-FORM               PICTURE AAA     VALUE SPACE.
  101     000830     02  U-FREQ               PICTURE AAA     VALUE SPACE.
  102     000850     02  U-XDATE              PICTURE X(8)    VALUE SPACE.
  103     000870     02  U-FUND               PICTURE X(18)   VALUE SPACE.
  104     000890     02  U-SUBCOST            PICTURE X(6)    VALUE ZERO.
  105     000900 PROCEDURE DIVISION.
  106     000910     OPEN INPUT HOLDINGS-FILE, OUTPUT UPDATE-FILE, INPUT DATA-CARD
  107     000920-    .
  108     000930 START1. READ DATA-CARD INTO DATA-REC AT END GO TO DITTO.
  109     000935     IF SEQ-NC = A-SEQ-NC PERFORM UPDATE, ELSE GO TO START2.
  110     000940     GO TO START1.
  111     000950 START2. READ HOLDINGS-FILE AT END GO TO FINISH.
  112     000960     IF SEQ-NC = A-SEQ-NC PERFORM UPDATE ELSE GO TO DITTO.
```

Suggested Solution, Problem D, Program (continued)

```
LINE NO.  SEQ. NO.        SOURCE STATEMENT

    113   000970      GO TO START1.
    114   000980 UPDATE. IF TITLEA MOVE UP-DATA TO U-TITLEA ELSE MOVE FIRST TO
    115   000990      L-TITLEA.
    116   000995      MOVE SEC-NO TO U-SEC-NO.
    117   001000      IF TITLEB MOVE UP-DATA TO U-TITLEB ELSE MOVE SECOND TO
    118   001010      L-TITLEB.
    119   001020      IF CLASSAC MOVE UP-DATA TO U-CLASS-NO ELSE MOVE D-CLASS-NO TO
    120   001030      L-CLASS-AC.
    121   001040      IF AUTHNC MOVE UP-DATA TO U-AUTH-NO ELSE M  E AUTHOR-NO TO
    122   001050      L-AUTH-AC.
    123   001060      IF HOLDA MOVE UP-DATA TO U-HOLDINGSA ELSE MOVE PART1 TO
    124   001070-     L-HOLDINGSA.
    125   001080      IF HOLDB MOVE UP-DATA TO U-HOLDINGSB ELSE MOVE PART2 TO
    126   001090-     L-HOLDINGSB.
    127   001100      IF SUBA MOVE UP-DATA TO U-SUBA ELSE MOVE A-SUB TO U-SUBA.
    128   001110      IF SUBB MOVE UP-DATA TO U-SUBB ELSE MOVE B-SUB TO U-SUBB.
    129   001120      IF SUBC MOVE UP-DATA TO U-SUBC ELSE MOVE C-SUB TO U-SUBC.
    130   001130      IF SUBD MOVE UP-DATA TO U-SUBD ELSE MOVE D-SUB TO U-SUBD.
    131   001140      IF LOCATION MOVE UP-DATA TO U-FLOOR ELSE MOVE FLOOR-LOCATION
    132   001150-     TO U-FLOOR.
    133   001160      IF SOURCE MOVE UP-DATA TO U-ACQ ELSE MOVE ACQ-SOURCE TO U-ACQ
    134   001170-     .
    135   001180      IF STATUS MOVE UP-DATA TO U-STATUS ELSE MOVE SUBS-STATUS TO
    136   001190      U-STATUS.
    137   001200      IF LANGUAGE MOVE UP-DATA TO U-LANG ELSE MOVE LANGUAGE-USED TO
    138   001210      L-LANG.
    139   001220      IF FORM MOVE UP-DATA TO U-FORM ELSE MOVE PHYS-FORM TO U-FORM.
    140   001230      IF FREQ MOVE UP-DATA TO U-FREQ ELSE MOVE FREQ-RECD TO U-FREQ.
    141   001240      IF XDATE MOVE UP-DATA TO U-XDATE  ELSE MOVE EXPIRE-DATE TO
    142   001250      U-XDATE.
    143   001260      IF FUND MOVE UP-DATA TO U-FUNC ELSE MOVE PAY-FUND TO U-FUND.
    144   001270      IF COST MOVE UP-DATA TO U-SUBCOST ELSE MOVE SUBSCRIPT-COST TO
    145   001280      L-SUBCOST.
    146   001290      WRITE UPDATE-RECORD FROM UPDATE-REC.
    147   001300 DITTO. MOVE HOLDINGS-RECORD TO UPDATE-REC.
    148   001310      WRITE UPDATE-RECORD FROM UPDATE-REC.
    149   001320      GO TO START2.
    150   001330 FINISH. CLOSE HOLDINGS-FILE, UPDATE-FILE, DATA-CARD.
    151   001340      STOP RUN.
```

Suggested Solution, Problem D, DEBE Printout Sample

```
CC02CC636       AIC       A. I. DIGEST                                                                    REC     1, LENGTH  3328
                                                  V. 9, 1961- TO PRESENT
                                                                                  AGRICULTURE    ANIMAL HUSB
AND.                                SECOND FLCOR       DJMC CURRENT ENGLISH       PA MO 010171  AGRICULT
URE       C0015CC003006J6.2     AAJ       ABERDEEN-ANGUS JOURNAL
                                                                        VOL. 39, 1957 THROUGH VOL. 42, 1
961, INCOMPLETE; VOL. 43,     1962 TC PRESENT
                                                                                                  AGRICULTUR
E    ANIMAL HUSBAND.                              SECOND FLCOR       DJMC CURRENT ENGLISH       PA MO
C10171  AGRICULTURE       C004C0CC0400805       AES       ABSTRACTS OF ENGLISH STUDIES
                                                                                        VOL. 1, 1958 TO
PRESENT, COMPLETE
      ARTS & SCIENCE ENGLISH                                          SEVENTH FLCOR      DJMC CURRENT ENG
LISH      PA MO 010171  ENGLISH           0012500000500506       AC12C1    ACADEMIE DES SCIENCES, COM
PTES RENDUS HEBDCMADAIRES DES          SEANCES: SERIE A, SCIENCES MATH.; SER. B, ... PHYSIQUES.
VOL. 262, 1966 TO PRESENT
                    ARTS & SCIENCE MATHEMATICS     PHYSICS                          SECOND FLOOR
FJSH CURRENT FRENCH       PA WK 123170  PHYSICS           0071050006C0506       AC12C2    ACADEMIE D
ES SCIENCES, COMPTES RENDUS HEBDCMADAIRES DES          SEANCES: SERIE C, SCIENCES CHIMIQUES
                VOL. 262, 1966 TC PRESENT
                                        ARTS & SCIENCE CHEMISTRY       PHYSICS                          SE
COND FLOOR       FJSH CURRENT FRENCH       PA WK 123170  PHYSICS           0071050007C0506       AC12
C3    ACADEMIE DES SCIENCES, COMPTES RENDUS HEBDCMADAIRES DES          SEANCES: SERIE D, SCIENCES NAT
URELLES                         VCL. 262, 1966 TC PRESENT
                                                  ARTS & SCIENCE SCIENCE         PHYSICS
            SECOND FLOOR       FJSH CURRENT FRENCH       PA WK 123170  PHYSICS           C071050008
C0658.05    ACM       ACADEMY CF MANAGEMENT, JOURNAL
                                                  VOL. 1, 1958 TO PRESENT, COMPLETE
                                                                  BUSINESS       MANAGEMENT
                                FIFTH FLCCR       DJMC CURRENT ENGLISH       PA QU 010171  BUSINESS ADM
IN.   C010C0CC09C0CAT. AS   SEPARATES ACADEMY CF POLITICAL SCIENCE, PROCEEDINGS
                                                        VOL. 26, 1957, INCOMPLETE; VOL. 28,
1958 TC PRESENT                                                                   ARTS & SCIENCE
 SCCIAL SCIENCE POLITICAL SCI.                FCURTH FLOOR       CC   CURRENT ENGLISH       PA IR 1231
70  SOCIAL SCIENCE     C012C0

C01CC0550       ASPE       ACADEMY CF SCIENCES USSR, PROCEEDINGS, EARTH SCIENCES SECTIONS                  REC     2, LENGTH  3328
                                                  VOL. 124, 1959 TO PRESENT
                                                                                  ENGINEERING    EARTH SCIEN
CES                                 SECOND FLCOR       FC   CURRENT ENGLISH       PA BM 123170  ENGINEER
ING       C095C0001100589.905   BAR       BACTERIOLOGICAL REVIEWS
                                                                        VOL. 1, 1937 TO PRESENT, COMPLET
E                                                                                                 ARTS & SCI
ENCE BOTANY          BACTERIOLOGY                    SECOND FLOOR       DJMC CURRENT ENGLISH       PA QU
C10171  BOTANY             C01C0000120065C.5     BAS       BALANCE SHEET
                                                                                        VOL. 37, 1955 TO
 PRESENT
      BUSINESS       FINANCE        ECONOMICS      COMMERCE       FIFTH FLOOR       DDGI CURRENT ENG
LISH      PA MO                        0000000001300332.05    BAN       BANKING

VOL. 35, 1942 TO PRESENT
                BUSINESS       BANKING        FINANCE        ECONOMICS      FIFTH FLOOR
DJMC CURRENT ENGLISH      PA MO 010171  BUSINESS ADMIN.   0008000001400332.05    BAR       BARRON'S

              VOL. 27, 1947, INCOMPLETE; VOL. 28, 1948 TO PRESENT
                                BUSINESS       FINANCE        ECONOMICS                          FI
FTH FLOOR       DJMC CURRENT ENGLISH      PA WK 010171  BUSINESS ADMIN.   0018000001700150.5     BHS
      BEHAVIORAL SCIENCE
                                VOL. 3, 1958 TC PRESENT
```

APPENDICES

APPENDIX A

SORT program for putting CIRCFILE in order by accession number (see Unit IV, problem B)

```
// JØB SØRTED (16001, 30003), 'SAM DYSØN', TIME=003
// ASSGN SYS001, X'180'
// ASSGN SYS002, X'180'
// TLBL FILEA, 'CIRCFILE', , DYSØN2
// DLBL FILEW, , 0, DA
// EXTENT SYS003, 111111, 1, 0, 1500, 400
// TLBL FILEØ, 'CIRCFILE', , DYSØN2
// EXEC DSØRT
 SØRT FØRMAT=BI, SIZE=225, FIELDS=(29, 6, A)
 RECØRD TYPE=F, LENGTH=(60, , 60)
 INPFIL BLKSIZE=(3600, X), INPUT=T
 ØUTFIL BLKSIZE=3600, ØUTPUT=T
 END
/*
/&
```

APPENDIX A, Sort Program, DEBE Printout

```
843   GS86RGONCOURT, E.L.A.M005890      264          03643000000 M36C MARVIN, FRANCIS  013293        REC     1, LENGTH  3600
229              009460910   868P BOWMAN, ISAIAH   015083      229              009875910   868G BOWMAN, I
SAIAH   015849      229              009650792   T279WTERRY, D. E.     017800      229              040287
792   P42W PERRY, C. A.     021498      222              06010090982 T37L THOMPSON, DOROTHY022070
229              009350808850SU875SUTTON, ROBERTA  023655      278              04954580886 8783SBROCKWAY,
 WALLACE028927      278              049625910   843F2BENGSTON, N. A.  033291      229              009525
910   868G BOWMAN, ISAIAH   035376      229              00972580886 G289FGENTRY, C. G.    040010
278              04967580887 AL53MALLEN, E. F.     040018      278              04972580887 AL53MALLEN, E.
 F.     040523      278              049750808820AM35SAMER. LIB. ASN.  041819      222              000157
90982 OV2D OVERSEAS PRESS C.041882      236              01452580887 B782LBROCK, H. I.     043868
278              05002590982 OV2N OVERSEAS PRESS C.046691      236              01487580886 SCH88SCHUSTER,
 M. L.  049652      278              04970090982 SCH16SCHAPIRO, J. S.  050389      229              008750
792   P317WPEARSON, HESKETH 051442      222              00080090982 N479 NEWSWEEK         052723
236              01432590982 SA37WSALTER, JAMES ART054026      229              008643910   8319WBATES, MA
RSTON   054552      229              00950790982 OV2E OVERSEAS PRESS C.056114      236              014575
80883 AS69BASQUITH, C. M. E.057537      278              04843390982 P759                  059686
229              008375792025AS39NASHWORTH, B.     061954      222              040065903   0499GDE VRIES,
 LOUIS  061998      236              01375090982 ST48CSTEVENSON, ADLAI 062170      229              009050
80883 B268CBARON, J. L.     066577      278              04892580885 R431MRIDDLE, GEORGE   068073
278              04942589173 G677TGORKII, MAKSIM   072078      236              01354380883 B2798BARROWS,
MARJORIE075330      278              04908080883 AR38SARGOSY           075421      278              048400
792   SE4M SELDEN, SAMUEL   082754      222              05926590982 SN61JSNOW, EDGAR      084436
229              00901290982 OB5W ORLENSKY, SERGE  085182      236              014463903   0499GDE VRIES,
 LOUIS  091186      236              01385090982>E77NSETON-WATSON, H.  095304      229              008900
80887 C335OCERF, E  A.      096629      278              05030079202202294CDAVIS, J. H.    097162
222              04027090982 N479FNEWSWEEK         100664      236              01435080883 B2898BARZUN, J
ACQUES  101232      278              04924090982 N479FNEWSWEEK         102453      236              014450
80885 P941SPROCHNOW, H. V.  104766      278              04941590982 SL28WSLESSOR, JOHN C. 105942
229              00898290982 PAP  DEAN, VERA M.    108212      229              00848390982 PAP  DEAN, VER
A M.    108213      229              00857180885 P941CPROCHNOW, H. V.  108312      278              049262
792   SO88CSOUTHEAN, RICHARD108912      222              05918280882084547BERGQUIST, G. W. 111251
222              000112792   R187WRATHBONE, BASIL  111439      222              059925910   B43F3BENGSTON,
 N. A.  111942      229              00958554700SF778 BURNS, ROBERT    112248      271              045070
547005F778 BURNS, ROBERT    112274      271              04517580883 B268ABARD, GENE       116797
278              04887590982 STR1SSTRACHEY, JOHN   117170      229              00907554700SF778 BURNS, RO
BERT    119441      271              04522579202SJ774SJOSEPH, STEPHEN  122510      222              000700

90982 OV2I OVERSEAS PRESS C.124515      236              01475054700SF778 BURNS, ROBERT    128505        REC     2, LENGTH  3600
271              04 2080883 B575FBLAIR, T. M. H.   133966      278              04924579202SK419SKENTON, W
ARREN   135818      222              000625547005F778                  137973      264              035950
547005F778                  145926      264              03602590982 R259AREES, DAVID      149942
229              00858079202JST86STRINDBERG, A     154295      222              04013590982N213PNAT'L. RR
OADCAST.155228      229              00941580887 B626TBLUMENFELD, GERRY156862      278              049925
792   P673WLEY-PISCATOR, M. 158204      222              05998979202SG4131GILLETTE, A. S.  158409
222              000729547005F778                  159139      264              03605080887 B626CBLUMENFEL
D, GERRY159415      278              0497750277  F987FFUSSLER, HERMAN  160078      243              023315
0281  D249RDARLING, R. L.    168167      243              023586025   D231WDANMARKS BIBLIOTE168173
250              02703679633 D265FDAUGHERTY, HUGH  168233      222              0001590961  R742MROTHE, ED
ITH     168238      243              023950070   W843EWILCOX, DENNIS L.168277      243              023800
0285  H939THURLIMANN, BETTINI68317      243              02365015018 ED95EEDWARDS, ALLEN L.168361
243              02435001753 M17A MC GAFFIN, WILL. 168369      250              02680002782 T229TTEEN AGE
LIB. ASN168389      243              02337589173 T58CETOLSTOI, L. N.   168479      236              013650
89173 T58KETOLSTOI, L. N.   168480      236              0137130214  B657LBOSTWICK, A. E.  168496
250              026900150   D51E DEWEY, JOHN      168499      243              024225150   D51E DEWEY, JO
HN      168500      243              0242757941  EU89WEUWE, MACHGIELIS 168562      222              000240
111   H273EHASEROT, F. S.    169564      243              024050150   F927OFROMME, ALLAN    168639
243              02433503102 T482TTIMBS, JOHN      168731      243              023743081   W871OWOODWARD,
 CHESTER168735      243              023940909   INBH INTERNAT. COMM.  168762      236              013975
150195F895YWOLMAN, B. B.    168789      243              02440089186 C171 CAPEK, KAREL     168795
236              0137199019  AM352AMER. COUNCIL OF 168803      236              0137259072  SA38HSALVEMINI
, GAETAN168817      236              01386302075 SM63FSMITH, P. J.     168818      250              026875
01573 L532PLEIDY, W. P.     168832      250              0266400253  N213SN. E. A. OF U. S.168858
250              0270850297  UN3I U. S. A. STANDARD168870      243              023675909   B534TBIRKENHEA
D, F.E.S168872      236              0139507933071NAM INGRAM, A. G.    168877      222              000500
7933  SH51OSHERBON, E.      168926      222              00060515097 3SMI51SHAKOW, DAVID   169122
243              0244070271  N481ENEWTON, A. E.    169148      243              02320079334 SE77YSETS IN O
RDER    169149      222              000255908   F533PFISHER, H. A. L. 169167      236              013923
0251  M838LMORSE, P. M.     169174      250              02705090982 C722TCOLTON, J. C.    169276
236              014235110   US3P USHENKO, A. P.   169306      243              024000128   L874NLOOS, A.
W.      169395      243              024123111185 SCH33SCHILLER, J. C. F169397      243              024078
547005F778                  173582      264              036075F     AS23MASCH, SHOLEM     174701
264              036100F     ER8GAERSKINE, JOHN    174702      264              036150F     G1272GAINES, E
. J.    174703      264              036185F     H189CHAMSUN, KUNT     174705      264              036200

F     H839CHOWELLS, W. D.   174706      264              036223F     M187RMCINTYRE, MARJOR.174707        REC     3, LENGTH  3600
264              036315F     SM56FSMITH, F. H.     174708      264              036428F     Y271FYATES, DO
ROTHY   174709      264              036400F     D934CDURHAM, R. L.    174771      271              044613
F     ED59SEDMUNDS, MURRELL 174772      215              291485843   G361FGIDE, A. P. G.   174774
271              044600F     G6532GORDON, C. W.    174775      215              973256F     L621MLIEBER, J
OEL     174776      271              044490F     OE6W OEMLER, MARIE    174777      271              044450
89173 P97CAPUSHKIN, A. S.   174778      215              018947F     S1645SINGH, KHUSHWANT 174779
215              119653F     W242GWARNER, C. D.    174780      264              03643682183 B82PRBROWNING,
 ROBERT 174906      215              00011282167 893PWBURNS, ROBERT    174907      271              045060
65882 D256DDARTNELL CORP.   174908      271              0450351554  G875BGRIFFITHS, RUTH  174909
271              04495081138_W59YMMILLER, E. H.    174911      271              04490037133ON2131NAT. INF.
 CENTER 174912      271              0448503309  N42W NEW YORK TIMES   174913      271              044828
664   N877PNOYES, ROBERT    174914      271              04480097351 7R67WOO'BRIEN, P. J.  174915
271              04487532747 SM53RSMITH, C. J.     174916      271              04479091730 3ST891STROUT, C
USHING  174918      271              044765                  174919      271              044780
34799 W2512                 174920      271              044710796   SH26SSHAW, J. M.      174921
215              0001577933  N582WBOURMAN  ANATOLE 174922      215              00015925707 C368QCHAPPELL,
 C. G.  174923      215              0002408209  K287SKELLETT, E. E.   174924      215              000255
8408  OX2  OXFORD BOOK, 19571174925       215              000500821   OX2  OXFORD BOOK, 19671174926
215              00060561069 P871WPOWER, D'ARCY    174927      215              040135824   P875EPOWYS, LL
EWELYN  174928      215              0402709175  R134LRAINE, J. W.     174929      215              000625
8088  R871TRUNES, D. D.     174930      215              04028791469 ST241STANISLANSKI, DANI74931
215              059182759S  ST31WSTEARNS, F. P.   174932      215              00070037815 5ST51ESTICKLER,
 W. H.  174933      215              059265396   G54WTTAYLOR, G. R. S. 174934      215              060100
370196T214WTAYLOR, HAROLD   174935      215              05998933094 2T437STICTNER, F. W.  174936
215              059925780 07 UP8S UPTON, G. P.    174937      215              0007298109  V338EVAN MOSTR
AND, A.D174938      215              00080065800 1W125PWAGNER, H. M.   174939      215              040065
7514  W672NWILLIAMS, HIRAM  174940      264              03646365800 1A435RAM. INST. OF I.E.174961
257              03224437283 2C498CCITIZENSHIP ED.  174962      257              03200091336 C548MCLARK, J.
 G. D.  174963      257              031965769   C582HCLEAVER, JAMES   174964      257              031900
8104  EL594ELLIS, C. M.     174966      257              031896701   F193AFALLICO, A. B.   174967
257              03187533246 7F914DFRIEDMAN, MILTON 174968      257              0318503008  T1578TANNENBAU
M, FRANK174969      257              03174690193 T729CTREVOR-ROPER, H.R174970      257              031682
320949V972CVUCINICH, W. S.  174971      264              036733350   W1471WALDO, DWIGHT    174972
264              0366358092  W154PWALKLEY, A. B.   174973      257              03222597373 L515WWHITE, H.
 A.     174974      257              03215037092 AL19WWEST, A. F.      174975      257              032125
```

APPENDIX A, Sort Program, DEBE Printout (continued)

```
32102 W622                    174976      264          0366003091736734VWINTER, J. A.    174978          REC     4, LENGTH  1440
257          032050821   Y84P YOUNG, EDWARD    174979      264          036481821   Y84P YOUNG, ED
WARD    174980      264          03655037782 R449                  174982      250          026509
282   G613WGOODIER, ALBAN    174983      250          025825804   G695LGOSSE, E. W.    174984
250          02572579606 IN8P .NT. CONGRESS    174985      250          025625248   M891JMUGGERIDG
E, MALC0174986      250          0254756159  N2132MRC COM. ON EFF. 174987      257          032912
942   N844WNOTESTEIN, W.    174988      257          0328003381768825 PORX INDUSTRY    174989
250          02647534242 P946SPROTHER, G. W.    174990      250          026375703   Q4A  QUICK, JO
HN      174991      250          0262259737138641CROLAND, C. P.    174992      257          032725
37973 SM62DSMITH, M. B.     174993      250          0262003389735054PSOMERS, H. M.    174994
250          0260258409  T345HTHIBAUDET, ALBERT174995      250          0259613805  T687
      174996      250          0258753014451723BTRENT, J. W.    174997      257          032634
89511 T782CTS'AI, T'ING-KAN 174998      250          0258507594  FB25YWESHER, P. R.    174999
257          0326257595  B417YWIND, EDGAR      175000      257          03240078124 W671SWILLIAMS,
 C. F. A74977      257          032100
```

APPENDIX B

SORT program for putting CIRC-FILE in numerical order by call number (see UNIT IV, problem D)

```
// JØB CLASSØRT (16001, 30003), 'SAM DYSØN', TIME=003
// ASSGN SYS001, X'181'
// ASSGN SYS002, X'181'
// TLBL FILEA, 'NEWFILE', , 999999
// DLBL FILEW, , 0, DA
// EXTENT SYS003, 111111, 1, 0, 1500, 400
// TLBL FILEØ, 'NEWFILE', , 999999
// EXEC DSØRT
 SØRT FØRMAT=BI, SIZE=225, FIELDS=(1, 11, A)
 RECØRD TYPE=F, LENGTH=(60, , 60)
 INPFIL BLKSIZE=(3600, X), INPUT=T
 ØUTFIL BLKSIZE=3600, OUTPUT=T
 END
/*
/&
```

APPENDIX B, Sort Program, DEBE Printout

```
                              174919092870271          044780F     AS23MASCH, SHOLEM      174701092170  REC     1, LENGTH  3600
264              036100F      D934CDURHAM, R. L.   174771092870271          044613F      ED59SEDMUNDS,
MURRELL 174772080370215              291485F      ER8GAERSKINE, JOHN     174702092170264          036150
F     G1272GAINES, E. J.     174703092170264          036145F     G6532GORDON, C. W.     174775080370
215              973256F      H189CHAMSUN, KUNT    174705092170264          036200F      H839CHOWELLS,
W. D.   174706092170264          036223F      L621HLIEBER, JOEL      174776092870271          044490
F     M187RMCINTYRE, MARJOR.174707092170264          036315F     OE8W OEMLER, MAXIE     174777092870
271              044450F      S1645SINGH, KHUSHWANT 174779080370215          119653F      SM56FSMITH, F.
 M.     174780892170264          036428F      W242GWARNER, C. D.     174780092170264          036436
F     Y271FYATES, DOROTHY    174790902170264          03640001573 L532PLEIDY, W. P.      168832090770
250              02664001753 M17A MC GAFFIN, WILL. 168369090770250          02680002075 SM63FSMITH, P.
 J.     168818090770250          0268750214   8657LBOSTWICK, A. E.   168496090770250          026900
025   D231WDANMARKS BIBLIOTE168173090770250          0270360251   H838LMORSE, P. M.      169174090770
250              0270500253   N2115N. E. A. OF U. S.168858090770250          0270850271   N481ENEWTON, A
. E.     169148080170243          0232000277   F987FFUSSLER, HERMAN   168078083170243          023315
02782 T229TTEEN AGE LIB. ASN168389083170243          0233750281   D249RDARLING, R. L.    168167083170
243              0235860285   H939THURLIMANN, BETTIN168317083170243          0236500297   UN3I U. S. A.
STANDARD168870083170243          02367503102 T482TTIMBS, JOHN       168731083170243090370CC015023743
070   W643EWILCOX, DENNIS L.168277083170243          023800081   W871OWOODWARD, CHESTER168735083170
243              0239400961   R742MROTHE, EDITH      168238083170243          02395C110    US3P USHENKO,
A. P.    169306083170243          0240001111   H273EHASEROT, F. S.    168564083170243          024050
11185 SCH33SCHILLER, J. C. F169397083170243          024078128    L874NLOOS, A. W.       169395083170
243              024123150    D51E DEWEY, JOHN       168499083170243          024225150    D51E DEWEY, JO
HN     168500083170243          024275150    F927OFROMME, ALLAN     168639083170243          024335
15018 ED95FEDWARDS, ALLEN L.168361083170243          02435015019SFR95YWOLMAN, B. B.      168789083170
243              024400150973SH151SHAKON, DAVID       169122083170243          0244071554   G8758GRIFFITHS
, RUTH   174909092870271          044950248    M991JMUGGERIDGE, MALC0174986090770250          025475
25207 C3680CHAPPELL, C. G.   174923080370215          000240282    G613WGOODIER, ALBAN    174983090770
250              0258253008   T157BTANNENBAUM, FRANK174969091470257          0317463014457T238TRENT, J.
 W.     174997091470257          032634309173W734VWINTER, J. A.     174978091470257          032050
320949V972CVUCINICH, W. S.   174971092170264          03673332102 W622                       174976092170
264              03660032747 SM53RSMITH, C. J.      174916092870271          0447903309   N42W NEW YORK
TIMES    174913092870271          044828330942T437STICTNER, F. W.    174936080370215          059925
332497F914DFRIEDMAN, MILTON 174968091470257          031850338176P825 PORK INDUSTRY      174989090770
250              026475338973SO54PSOMERS, H. M.       174994090770250          02602534242 P946SPROTHER,
G. W.    174990090770250          02637534799 W2512                      174920092870271          044710

350   W147IWALDO, DWIGHT     174972092170264          03663537019GT214WTAYLOR, HAROLD    174935080370  REC     2, LENGTH  3600
215              05998937092 AL19WWEST, A. F.       174975091470257          032125371330N2131NAT. INF.
 CENTER 174912092870271          044850372832C49ACCITIZENSHIP ED.   174962091470257          032000
37782 R449                    174982090770250          026509378155S15ESTICKLER, W. H.    174933080370
215              05926537973 SM62DSMITH, M. B.      174993090770250          0262003805   T687
         174996090770250          025875396    G54WTTAYLOR, G. R. S.  174934080370215          060100
547005F778 BURNS, ROBERT     112248092870271          045075547005F778 BURNS, ROBERT      112274092870
271              045175547005F778 BURNS, ROBERT       119441092870271          045225547005F778 BURNS, RO
BERT     128505092870271          045250547005F778                       137973092170264          035950
547005F778                    145926092170264          036025547005F778                       159139092170
264              036050547005F778                     173582092170264          036075610G9 P871WPOWER, D'
ARCY     174927080370215          0401356159   N2132NRC COM. ON EFF.  174987091470257          032912
658001AM35RAM. INST. OF I.E.174961091470257          032244658001W125PWAGNER, H. M.      174939080370
215              04006565882 D256DDARTNELL CORP.      174908092870271          045035664    N877PNOYES, RO
BERT     174914092870271          044800701    F193AFALLICO, A. B.    174967091470257          031875
703   Q4A  QUICK, JOHN       174991090770250          0262257514   W672NWILLIAMS, HIRAM   174940092170
264              0364637594   F825YWESHER, P. R.    174999091470257          0326257595   B417YWIND, EDG
AR       175000091470257          0324007595   ST31WSTEARNS, F. P.    174932080370215          000700
769   C582HCLEAVER, JAMES    174966091470257          0319007800? UPBS UPTON, G. P.      174937080370
215              00072978124 W671SWILLIAMS, C. F.   174977091470257          032100792    P317WPEARSON,
HESKETH 051442081070222          000800792    P42W PERRY, C. A.      021498081070222          060100
792   P673WLEY-PISCATOR, M. 158204081070222          059989792    R187WRATHBONE, BASIL   111439081070
222              059925792    SE4M SELDEN, SAMUEL    082754081070222          059265792    SO88CSOUTHERN,
 RICHARD108912081070222          059182792    T279WTERRY, D. E.      017800081070222          040287
792022D294CDAVIS, J. H.      097162081070222          040270792023ST860STRINDBERG, A     154295081070
222              040135792025AS39NASHWORTH, B.       061954081070222          040065792025G413IGILLETTE,
 A. S.   158409081070222          000729792025J774SJOSEPH, STEPHEN   122510081070222          000700
792025K419SKENTON, WARREN    135818081070222          0006257933   N582WBOURMAN   ANATOLE 174922080370
215              0001597933   SH51OSHERBON, F.      168926081070222          000605793107IN4P INGRAM, A
. G.     168877081070222081770000350005079334 SE77YSETS IN DADER     169149081070227          000255
7941  EU89WEUWE, MACHGIELIS 168562081070222          000240796    SH265SHAW, J. H.       174921080370
215              00015779606 IN8P INT. CONGRESS       174985090770250          025625796J3 D265FDAUGHERTY
, HUGH   168233081070222          000159804    G695LGOSSE, E. W.      174984090770250          025725
8088  R871TRUNES, D. D.      174930080370215          040287808820AM355AMER. LIB. ASN.   041819081070
222092870C0024500015780882OB454TBERGQUIST, G. W. 111251081070222          00011280883 AR385ARGOSY
         075421100570278               04840080883 AS698ASQUITH, C. M. E.057537100570278          048433

80883 B268ABARO, GENE        116797100570278               04887580883 B268CBARON, J. L.      066577100570  REC     3, LENGTH  3600
278              04892580883 B279BBARROWS, MARJORIE075331005702?8          04908080883 B289DBARZUN, J
ACQUES   101232100570278          04924080883 B575FBLAIR, T. M. H.   133966100570278          049245
80885 P941CPROCHNOW, M. V.   108312100570278          04926280885 P941SPROCHNOW, H. V.   104766100570
278              04941580885 R431MRIDDLE, GEORGE      068073100570278101870000650494258088505U875SUTTON, R
JBERTA   023655100570278          04954580886 B783SBROCKWAY, WALLACE028927100570278          049625
80886 G289FGENTRY, C. G.     040010100570278               04967580886 SCH88SCHUSTER, M. L.   049652100570
278              04970080887 AL53MALLEN, E. F.       040018100570278100770000100497258088? AL53MALLEN, E.
 F.      040523100570278               04975080887 B626CBLUMENFELD, GERRY159415100570278          049775
80887 B626TBLUMENFELD, GERRY156862100570278          04992580887 B782LBROCK, H. I.      043868100570
278              05002580887 C335OCERF, B. A.         096629100570278          0503008092   W154PWALKLEY,
A. B.    174973091470257          0322258104   EL594ELLIS, C. M.      174966091470257          031896
8109  V338EVAN NOSTRAND, A.D174938080370215          00080081138_W59YMMILLER, E. H.     174911092870
271              0449C08209   K287SKELLETT, E. E.     174924080370215          000255821    0X2  OXFORD BO
OK, 196717492608037021S          000605821    Y8&P YOUNG, EDWARD     174979092170264          036481
821   Y84P YOUNG, EDWARD     174980092170264               03655082167 B93PWBURNS, ROBERT     174907092870
271              04506082183 B82PRBROWNING, ROBERT 174906080370215          000112824    P875EPOWYS, LL
EWELYN   174928080370215          0402708408   0X2  OXFORD BOOK,  195717492508037021S          000500
8409  T345HTHIBAUDET, ALBERT174995090770250          025961843    G361FGIDE, A. P. G.    174774092870
271              044600843    G586RGCNCOURT, E.L.A.H005890092170264          03645089173 G677TGORKII, M
AKSIM    072078082470236               01354389173 P97CAPUSHKIN, A. S.    174778080370215          018947
89173 T58CFTOLSTOI, L. N.    168479082470236               01365089173 T58KETOLSTOI, L. N.    168480082470
236              01371389186 C171 CAPEK, KAREL        168795082470236               01371989511 T782CTS'AI, T'
ING-KAN 174998090770250          0258509019   AM352AMER. COUNCIL OF 168803082470236          013725
90193 T729CTREVOR-ROPER, H.R174970091470257          031682903    D499GDE VRIES, LOUIS   061998082470
236              013750903    D499GDE VRIES, LOUIS   091186082470236          0138509072   SA38HSALVEMINI
, GAETAN168817082470236092170001400138639O8    F533PFISHER, H. A. L. 169167082470236          013923
909   8534TBIRKENHEAD, F.E.S168872082470236               013950909    IN8H INTERNAT. COMM.   168762082470
236              01397590982 C722TCOLTON, J. C.       169276082470236               01423590982 N479 NEWSWEEK
         052723082470236               01432590982 N479FNEWSWEEK              100664082470236          014350
90982 N479FNEWSWEEK          102453082470236               01445090982 OB5W OBLENSKY, SERGE   085182082470
236              01446390982 OV2D OVERSEAS PRESS C.041882082470236               01452590982 OV2E OVERSEAS
PRESS C.056114082470236               01457590982 OV2I OVERSEAS PRESS C.124515082470236          014750
90982 OV2N OVERSEAS PRESS C.046691082470236               01487590982 PAP  DEAN, VERA M.     108212081770
229              00848390982 PAP  DEAN, VERA M.       108213081770229               00857190982 P759
         059686081770229               00837590982 R259AREES, DAVID          149942081770229          008580
```

```
90982 SA37WSALTER, JAMES ART054026081770229          00864390982 SCHIASCHAPIRO, J. S.  05038908177O  REC    4, LENGTH  1440
229          00875090982 SL28WSLESSOR, JOHN C. 10594208177O229          00898290982 SWCIJSNOW, EDG
AR      084436081770229          00901290982 STA8CSTEVENSON, ADLAI 06217608177O229          009050
90982 ST815STRACHEY, JOHN   117170081770229          00967590982 T37L THOMPSON, DOROTHY02207008177O
229          00935090982DE77WSETON-WATSON, H.  09530608177O229          00890090982A2139PN&T'L, PA
OADCAST.155228081770229          00941590999  P36C MARVIN, FRANCIS  01329308177O2241066700250009440
910   B319WBATES, MARSTON   05455208177022908187000005009507910   B43F2HENGSTON, N. A.  03329108177O
229          009525910   B43F3BENGSTON, N. A.  11194208177O229          009585910   B88G BOWMAN, I
SAIAH   01584908177O229          009650910   B88G BOWMAN, ISAIAH   03537408177O229          009725
910   B88P BOWMAN, ISAIAH   01508308177O229          00987591334 C548MCLEAR, J. G. D.  17496409147O
257          03196591469 ST241STANISLANSKI, DAN174931080370215          05918291730355T891STROUT, C
USHING  174918092870271          0447659175  R135L981NE, J. W.     174929040370215          000625
942   N844WNOTESTEIN, W.    174988091470257          03280097371396 41CROLAND, C. P.    17499209147O
257          03272597373 L515WWHITE, W. A.     174974091470257          03215097391787900*BRIEN,
P. J.   174915092870271          044875
```

APPENDIX C

SORT program for putting NEWFILE in numerical order by ID number (see UNIT IV, problem C)

```
// JØB IDSØRT (16001, 30003), 'SAM DYSØN', TIME=001
// ASSGN SYS001, X'181'
// ASSGN SYS002, X'181'
// TLBL FILEA 'NEWFILE  ', , 999999
// DLBL FILEW, , 0, DA
// EXTENT SYS003, 111111, 1, 0, 1500, 400
// TLBL FILEØ, 'NEWFILE', , 999999
// EXEC DSØRT
 SØRT FØRMAT=BI, SIZE=225, FIELDS=(55, 6, A)
 RECØRD TYPE=F, LENGTH=(60, , 60)
 INPFIL BLKSIZE=(3600, X), INPUT=T
 ØUTFIL BLKSIZE=3600, ØUTPUT=T
 END
/*
/&
```

APPENDIX C, Sort Program, DEBE Printout

```
8088208454TBERGQUIST, G. W. 111251081070222                    0001128088208AM35SAMER. LIB. ASN.  041819081070  REC    1, LENGTH  3600
2220928700024500015779G   SH265SHAW, J. M.      1749210803702l5                 00015779633 D265FDAUGHERTY
, HUGH  168233081070222                0001597933   N582WBOURMAN  ANATOLE 1749220803702l5                 000159
7941  EU89WEUWE, MACHGIELIS 168562081070222                    00024079334 SE77YSETS IN ORDER          169149081070
222                0002558209  K287SKELLETT, E. E.    1749240803702l5                 0002557933O7INAM INGRAM, A
. G.    168877081070222081770000350005008408  0X2  OXFORD BOOK, 19571749250803702l5                 000500
7933  SH510SHERBOW, F.      168926081070222                    000605821    0X2  OXFORD BOOK, 1967174926080370
215                0006059792025K419SKENTON, WARREN   135818081.  222                0006259175  R134LRAINE, J.
W.      1749290803702l5                0006257920253J745JOSEPH, STEPHEN  1225100810702222                000700
7595  ST31WSTEARNS, F. P.    1749320803702150805700001000070078007 UP8S UPTON, G. P.      174937080370
215                0007297927  P317WPEARSON, HESKETH 0514420810702222                0008008109  V338EVAN NOSTR
AND, A.D1749380803702l5                00080090982 P759                                  059686081770229          008375
90982 PAP  DEAN, VERA M.     1082120817702229                    00848399O8, PAP  DEAN, VERA M.     108213081770
229                00857190982 SA37WSALTER, JAMES ART054026081770229                    00866390982 SCH16SCHAPIRO,
 J. S.  05038908l770229                00875090982JE77NSETON-WATSON, H.  095304081770229          008900
90982 SL28WSLESSOR, JOHN C.  1059420817702229                    00898290982 SN61JSNOW, EDGAR          084436081770
229                00901290982 ST48CSTEVENSON, ADLAI 062170081770229                    00905090982 ST815STRACHEY,
 JOHN    117170081770229                00907590982 T37L THOMPSON, DOROTHY022070081770229          009350
9099  H36C MARVIN, FRANCIS  013293081770229100670002500094609l0    B319WBATES, MARSTON  054552081770
2290818700000500950791O   B43F2BENGSTON, N. A.    033291081770229                    009525910    B43F3BENGSTON,
 N. A.    111942081770229                009585910    868G BOWMAN, ISAIAH    015849081770229          009650
910   868G BOWMAN, ISAIAH    035374081770229                    009725910    868P BOWMAN, ISAIAH    015083081770
229                00987589173 T58CETOLSTOI, L. N.    168479082470236                    01365089173 T58KETOLSTOI,
L. N.   168480082470236                01371389186 C171 CAPEK, KAREL    168795082470236                    013719
903   D499GDE VRIES, LOUIS  061998082470236                    013750903    D499GDE VRIES, LOUIS  091186082470
236                0138509072  SA38HSALVEMINI, GAETAN168817082470236092170001400138639O8    F533PFISHER, H
. A. L.  169167082470236                013923909    B534TBIRKENHEAD, F.E.S168872082470236          013950
909   IN8H INTERNAT. COMM.  168762082470236                    01397590982 N479 NEWSWEEK          052723082470
236                01432590982 NA79FNEWSWEEK          100664082470236                    01435090982 NA79FNEWSWEEK
          102453082470236                01445090982 O85W OBLENSKY, SERGE  085182082470236                    014463
90982 OV2D OVERSEAS PRESS C.041882082470236                    01452590982 OV2E OVERSEAS PRESS C.056114082470
236                01457590982 OV2I OVERSEAS PRESS C.124515082470236                    01475090982 OV2N OVERSEAS
PRESS C.046691082470236                01487589173 P97CAPUSHKIN, A. S.    174778080370215          018947
0271  NA81ENEWTON, A. E.    169148083170243                    0232000277   F987FFUSSLER, HERMAN  168078083170
243                0233150281  D249RDARLING, R. L.    168167083170243                    0235860285   H939THURLIMANN
, BETTIN168317083170243                02365003102 T482TTIMBS, JOHN                    168731083170243090370CC015023743

070   W643EWILCOX, DENNIS L.168277083170243                    023800081    W871OWOODWARD, CHESTER16[illegible]35083170  REC    2, LENGTH  3600
243                0239400961   R742MROTHE, EDITH      168238083170243                    023950110    US3P L.HENKO,
A. P.    169306083170243                024000111    H273EHASEROT, F. S.    168564083170243          024050
11185 SCH33SCHILLER, J. C. F1693970831702l3                    024078128    L874NLQOS, A. W.      169395083170
243                024123150   D51E DEWEY, JOHN      168499083170243                    024225150    D51E DEWEY, JO
HN      168500083170243                024275150    F927OFROMME, ALLAN    168639083170243          024335
15018 ED95EEDWARDS, ALLEN L.168361083170243                    024350150195F895YWOLMAN, B. B.    168789083170
243                0244001509735HL5ISHAKON, DAVID      169122083170243                    02440779606 IN8P INT. CONG
RESS    174985090770250                025625804    G695LGOSSE, E. W.      174984090770250          025725
282   G613WGOODIER, ALBAN    174983090770250                    02582589-11 T782CTS'AI, T'ING-KAN 174998090770
250                0258503805   T687                    174996090770250                    0258758409   T345HTHIBAUDET
, ALBERT174995090770250                025961338973SO54PSOMERS, H. M. -  174994090770250091270000250260 25
37973 SN62DSMITH, M. B.      174993090770250                    026200703    Q4A QUICK, JOHN          174991090770
250                02622534242 P946SPROTHER, G. W.    174990090770250092770001000026375338176P825 PORK INDU
STRY    174989090770250                02647537782 R449                    174982090770250                    026509
01573 L532PLEIDY, W. P.      168832090770250                    02664001753 M17A MC GAFFIN, WILL. 168369090770
250                02680002075 SM63FSPITH, P. J.      168818090770250                    0268750214   B657LBOSTWICK,
 A. E.   168496090770250                026900025    D231WDANMARKS BIBLIOTE168173090770250          027036
0251  MB38LMORSE, P. M.      169174090770250                    0270500253   N213SN. E. A. OF U. S.168858090770
250                02708590193 T729CTREVOR-ROPER, H.R174970091470257                    0316823008   T157BTANNENBAU
M, FRANK174969091470257                031746701    F193AFALLICO, M. B.    174967091470257          031875
8104  EL594ELLIS, C. M.      174966091470257                    031896769    C582MCLEAVER, JAMES      174964091470
257                0319003728J2C498CCITIZENSHIP ED.    174962091470257                    03200030913W734VWINTER, J
. A.    174978091470257                03205078124 W671SWILLIAMS, C. F.    174977091470257          032100
37092 AL19WWEST, A. F.      174975091470257                    03212597373 L515WWHITE, H. A.    174974091470
257                0321508092   W134PWALKLEY, A. B.    174973091470257                    032225658001AM35RAM, INST.
 OF I.E.174961091470257091770000150322447595  B617YWIND, EDGAR          175000091470257          032400
7594  F825YWESHER, P. R.     174999091470257                    0326253014457T23BTRENT, J. W.    174997091470
2570929700007503263497371386 41CROLAND, C. P.    174992091470257                    03272594Z   N844WNOTESTEIN
, W.    174988091470257                0328006159   N2132NRC COM. ON EFF. 174987091470257          032912
547005F778                    145926092170264                    03602554700SF778                    159139092170
264                03605054700SF778                    173582092170264                    036075F      AS23MASCH, SHO
LEM     174701092170264                036100F      G1272GAINES, E. J.    174703092170264          036185
F     H189CHAMSUN, KUNT      174705092170264                    036200F      H839CHOWELLS, W. D.    174706092170
264                036223F      M187RMCINTYRE, MARJOR.174707092170264                    036315F      Y271FYATES, DO
ROTHY   174709092170264                036400F      SM56FSMITH, F. H.      174708092170264          036428

F     W242GWARNER, C. D.     174780092170264                    036436843    G586RGONCOURT, E.L.A.H005890092170  REC    3, LENGTH  3600
264                0364507514  W672NWILLIAMS, HIRAM   1749400921702640925700002003646382l    Y84P YOUNG, ED
WARD    174979092170264                036481821    Y84P YOUNG, EDWARD      174980092170264          036550
32102 W622                    174976092170264                    036600350    W147IWALDO, DWIGHT     174972092170
264                0366353209499V972CVUCINICH, W. S.  174971092170264100770000800367337920254S39NASHWORTH,
B.      061954081070222                040065658001WL25PWAGNER, H. M.    174939080370215          040065
792023ST860STRINDBERG, A    154295081070222                    04013561049  PB71WPOWER, D'ARCY       174927080370
215                0401357920220294CDAVIS, J. H.      097162081070222                    040270824    P875EPOWYS, LL
EWELYN  174928080370215                040270792    T279WTERRY, D. E.      017800081070222          040287
8088  R871TRUNES, D. D.      174930080370215                    040287F      OE6W OEHLER, MARIE       174777092870
271                044450F      L621HLIEBER, JOEL      174776092870271                    044490843    G361FGIDE, A.
P. G.   174774092870271                044600F      D934CDURHAM, R. L.    174771092870271          044613
34799 W2512                   174920092870271                    044710                    0447903409   N42W NEW YORK
271                04478032747 SM53RSMITH, C. J.      174916092870271                    0447903409   N42W NEW YORK
TIMES   174913092870271                04482837133ON2131NAT. INF. CENTER 174912092870271          044850
973917R67WOO'BRIEN, P. J.    174915092870271                    04487581138_W59YMRILLER, E. H.    174911092870
271                0449001554   G875BGRIFFITHS, RUTH   174909092870271100270000200449506588Z D256DDARTNELL
CORP.   174908092870271                04503582167 B93PWBURNS, ROBERT      174907092870271101770000095045060
547005F778 BURNS, ROBERT     112248092870271                    04507054700SF778 BURNS, ROBERT     112274092870
271                04517554700SF778 BURNS, ROBERT     119441092870271                    04522554700SF778 BURNS, RO
BERT    128505092870271                04525080883 AS69BASQUITH, C. M. E.057537100570278          048433
80883 B268ABARO, GENE         116797100570278                    04880580883 B268CBARON, J. L.     066577100570
278                04892580883 B279BBARROWS, MARJORIE075330100570278                    0490808088J B289DBARZUN, J
ACQUES  101232100570278                04924080883 B575FBLAIR, T. M. H.    133966100570278          049245
80885 P941CPROCHNOW, H. V.   108312100570278                    04926280885 P941SPROCHNOW, H. V.  104766100570
278                04941580885 R43LMRIDDLE, GEORGE    068073100570278101870000650494258088G B783SBROCKWAY,
 WALLACE028927100570278                04962580886 G289FGENTRY, C. G.    040010100570278          049675
80886 SCH88SCHUSTER, M. L.   049652100570278                    04970080887 AL53MALLEN, E. F.     040018100570
278107700001004972580887 AL53MALLEN, E. F.    040523100570278                    04975080887 B626CBLUMENFEL
D, GERRY159415100570278                04977580887 B62[illegible]BLUMENFELD, GERRY156862100570278          049925
80887 B782LBROCK, H. I.      043868100570278                    05002580887 C335OCERF, B. A.      096629100570
278                050300792    S088CSOUTHERN, RICHARD108912081070222                    05918291469 ST241STANISLAN
SKI, DAN174931080370215                059182792    SE4M SELDEN, SAMUEL    082754081070222          059265
3781595T91ESTICKLER, W. H.   174933080370215                    059265792    R187WRATHBONE, BASIL  111439081070
222                05992533094274375TICTNER, F. W.    174936080370215100570003150599257 92    P673WLEY-PISCA
TOR, M. 158204081070222                05998937019672I4WTAYLOR, HAROLD      174935080370215          059989

396   G54WTTAYLOR, G. R. S. 174934080370215                    060100F      [illegible].645SINGH, KHUSHWANT 174779080470  REC    4, LENGTH  240
215                119653F      ED59SEDFUNDS, MURRELL 174772080370215                    291485F      G6532GORDON, C
. W.    174775080370215                973256
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COMPUTING CENTER PROCEDURES

LOUISIANA TECH COMPUTING CENTER

March 16, 1970

PROCEDURE FOR PROCESSING PROGRAMS ON THE LOUISIANA TECH IBM 360

I. GENERAL CLOSED SHOP PROCEDURE FOR PROCESSING INSTRUCTIONAL AND RESEARCH PROGRAMS.

All coding sheets that are to be keypunched by Computing Center keypunch operators will be processed through the dispatching system. That is, a coding sheet to be keypunched is left at the dispatching window and picked up from the dispatching window in room KH 106.

A program ready for computer run will be presented at the dispatching window in room KH 106. Such a program must be complete with all control cards and data necessary for processing by the 360 computer. Under normal conditions the first card of an input deck will be the JOB card. The JOB card must contain the job name, department number, project number, the user's name, and the computer time required by the program in minutes (see Dispatching Station Physical Description for exact format). This information is stored by the computer and used at the end of the month to prepare the Computing Center Users Accounting System reports. If special instructions are necessary for the processing of a program, such as mounting special tapes, disks, forms, etc., use one of the old Utilization Record cards that are available on the table by the dispatching window to point out these special instructions and place it first in the input deck.

The machine operator will process programs on a first-in first-out basis. One exception to this procedure will be that long execution time (in excess of 30 minutes) programs will generally be processed during the closed shop run at 5:00 p.m.

Programs will be processed during the normal work day by the machine operator during times that he is not busy with administrative runs. All programs that do not get processed during this time will be processed in an "after hours" closed shop run. This closed shop shift will be from 5:00 p.m. to 8:30 p.m. Programs still remaining to be processed at the end of this operator attended shift will be batched into the system and the program decks and associated output distributed at 7:15 a.m. the next morning. Between terms and during vacation periods the "after hours" closed shop run will not be scheduled.

Any person who feels it necessary to be present in the machine room at the time his program is processed (to add or remove data cards, etc. -- not to correct errors in logic, coding, data, etc.) must submit his program

to be processed during the "after hours" closed shop run. The shift operator will have the authority to judge the legitimacy of this need. In order to maintain operating efficiency it will be necessary to keep machine room congestion to a minimum. This is to be accomplished by limiting access to the machine room to Computing Center personnel only. Any classes, laboratories, etc. that wish to use the facility as a group with the instructor should make arrangements with the Director of the Computing Center in advance.

Programs that have been processed may be picked up from the dispatching window. If corrections are necessary, they may be made in room KH 105 and the program resubmitted to be processed again using the above procedure. The honor system will be used to maintain the integrity of this Closed Shop procedure. Everyone should use the utmost caution in picking up processed program decks and output sheets to assure that only his materials and not someone elses are removed.

II. GENERAL INFORMATION

All communication, user-center, will be via Room 102, Keeny Hall.

A. Keypunch In

Source programs will be written on coding sheets (available at the bookstore) and left at the dispatching window in KH 106. Only material submitted on these forms will be processed. All other will be rejected. These programs will be keypunched on a first-in first-out basis.

Corrections to previously punched programs will also be written on coding sheets and submitted as though they were separate programs. No cards should be submitted for keypunch correction. The user is responsible for inserting corrected cards into a program or data deck.

All new programs should be coded including the proper control cards. The JOB card must contain, in addition to the program name the following information: (1) User's department and project number (2) User's name (3) Computer time required in minutes.

Input data will be coded on the reverse side of the coding sheets beginning with the back of the last page used for the source program.

The user's name, department number, project number, course number and problem number should be written in the upper left corner of ALL coding sheets used. Write "360" in large numerals at the top of each coding sheet to distinguish these programs from those to be keypunched for IBM 1620. This is important because the keypunch coding is different.

B. Keypunch Out

After programs are keypunched, the decks will be wrapped with the coding sheet, banded, and will be available at the dispatching window in Room 106 KH. Users should check by this room frequently to avoid an accumulation of programs.

After picking up the keypunched decks, the user should compare this deck carefully against the coding sheet to assure himself that there are no keypunch errors before submitting the program to the computer. If keypunch errors are present, he should write the corrected statement on a coding sheet and resubmit it to keypunch.

C. Computer In

When the user is satisfied that the program is free of keypunch errors, he may submit the deck to the computer. The program deck containing the appropriate control cards, source program, and data should be rubber banded and presented at the dispatch window according to instructions contained in the memorandum on the dispatching system. No unbanded programs will be accepted. Coding sheets and old program listings are NOT to be included with the decks.

D. Computer Out

Upon completion of a run, the computer operator will return the program deck with a listing of the program and a listing of the output (if any) and/or any error diagnostics to the dispatching station. Again programs should be picked up promptly to avoid accumulation. Program materials left more than 72 hours will be thrown away.

E. Program Restart

Programs that require more than 4 hours for execution should include an interrupt-restart routine in order that the program can be restarted without significant loss of execution time if it becomes necessary to interrupt its execution. Users needing assistance in including such a routine in their program can readily get this assistance from Computing Center personnel.

SPECIAL POINTS TO REMEMBER

1. DO hand in all programs for closed-shop processing on coding sheets (available at the bookstore).

2. DO identify each coding sheet by writing name, department number, project number, course number, and problem number in the space provided at the top of the sheet used.

3. DO write "360" in large numerals at the top of each coding sheet.

4. DO clip all coding sheets for one program together.

5. DO check all cards for keypunch errors before submitting program to computer.

6. DO use CALL EXIT statement. (FORTRAN users only)

7. DO observe the following coding conventions.

   CODING CONVENTIONS: The following standard coding conventions should be followed in lettering program coding sheets for Closed Shop keypunching.

   Neatness is of prime importance
   All lettering will be in upper case

   Ø - letter O
   0 - numeral 0
   Z - letter Z
   2 - numeral 2
   I - letter I
   1 - numeral 1
   ß - blank space

   distinguish (from the letters C and L
   distinguish G from numeral 6
   distinguish H from N
   distinguish S from the numeral 5

8. DO NOT resubmit decks for keypunch corrections; submit a coding sheet containing only the statements to be re-keypunched. Write "corrections" at the top of the page.

DISPATCHING STATION PHYSICAL DESCRIPTION

The Tech Computing Center is now using a dispatching procedure designed to effectively control and protect User's programs that are submitted for keypunching and processing on the IBM 360.

The IBM 360 Closed Shop dispatching station is located at room door number 106 Keeny Hall. A window and counter have been installed in this door for the purpose of receiving keypunching jobs and input programs and dispersing program decks and associated output. Inside the door is a cabinet with forty-nine compartments for the storage of computer output by code number and trays for the storage of program decks that have been processed.

TIME SCHEDULE

The dispatching station will be staffed during the following times:

Monday through Friday

7:15 - 7:45 a.m.
8:45 - 9:15 a.m.
10:15 - 10:45 a.m.
11:45 - 1:45 p.m.
2:45 - 8:30 p.m.

Saturday			Sunday		
8:20	-	9:15 a.m.	2:00	-	3:00 p.m.
10:15	-	11:45 a.m. (G.C.R.)	5:00	-	8:00 p.m. (G.C.R.)
2:00	-	3:00 p.m.			
5:00	-	6:00 p.m. (G.C.R.)			

NOTE: Above times are subject to change as dictated by usage.

During the time not covered by the above dispatching schedule a user, at his discretion and risk, may leave an input program in the tray on the table in the hall. These programs will be put into process at the beginning of the next scheduled dispatching time and after they are processed the decks and their associated output will be placed on the table for pickup by the user.

G.C.R. - Guaranteed computer runs at these times. Other week-end times are listed for dispatching activities and, if volume dictates, computer runs.

PROCEDURE FOR USE

1. Prepare jobs in usual manner with all necessary job control cards.

2. // JOB card must contain the JOB name, the USER'S Department Number, the USER'S Project Number, the USER'S Name, and the total time required by the program in minutes in the following format:

   // JOB NEW (0501, 01010), 'A. User', TIME=3

   a) The job name may consist of eight characters or less.

   b) The user name may contain any character between the quotation marks except another quote. The length of the user name cannot exceed 20 characters including spaces.

   c) The mmm in TIME=mmm is the estimated time in minutes the program will run. The time estimate must include compilation time.

   It is important that the estimated time in minutes have no leading blanks and that the time estimate be as accurate as possible. A time estimate that is too small will cause the program execution to terminate before completion (when the time estimate is exceeded by 15 seconds the job is terminated) whereas an estimate that is too large will cause the program to receive a lower run priority and lengthen the turn-around time for its execution (longer programs are run after the shorter programs have been processed).

3. Only if special instructions (such as mounting tapes, special disks, output in excess of 1500 lines of print, etc.) are necessary for the processing of a program will it be necessary to fill in the Special Instructions section of the yellow Utilization Record card found on the table by the dispatching window.

4. Present the input program deck to the dispatcher at the window.

5. The dispatcher will give the user a Receipt Card containing a four-digit number and put a // NUMBER card containing the same four-digit number on the front of the user's input program deck.

6. When the user returns to pick up his program deck and computer output he must present his RECEIPT CARD in order to receive his work.

Any suggestions for the improvement of this procedure will be appreciated.

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